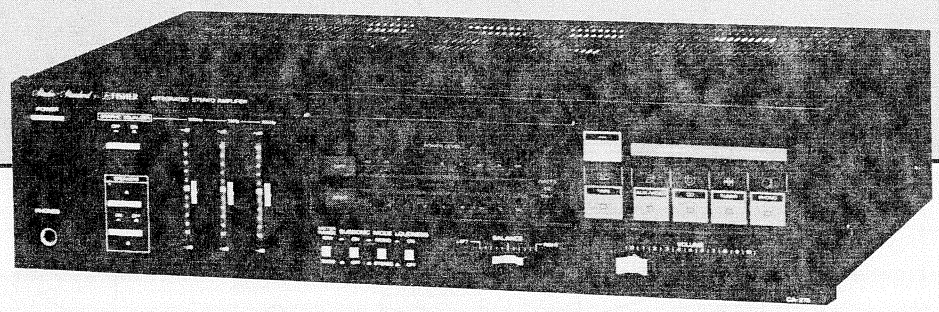
SERVICE MANUAL

FISHER

CA-275

Integrated Stereo Amplifier

(EUROPE)

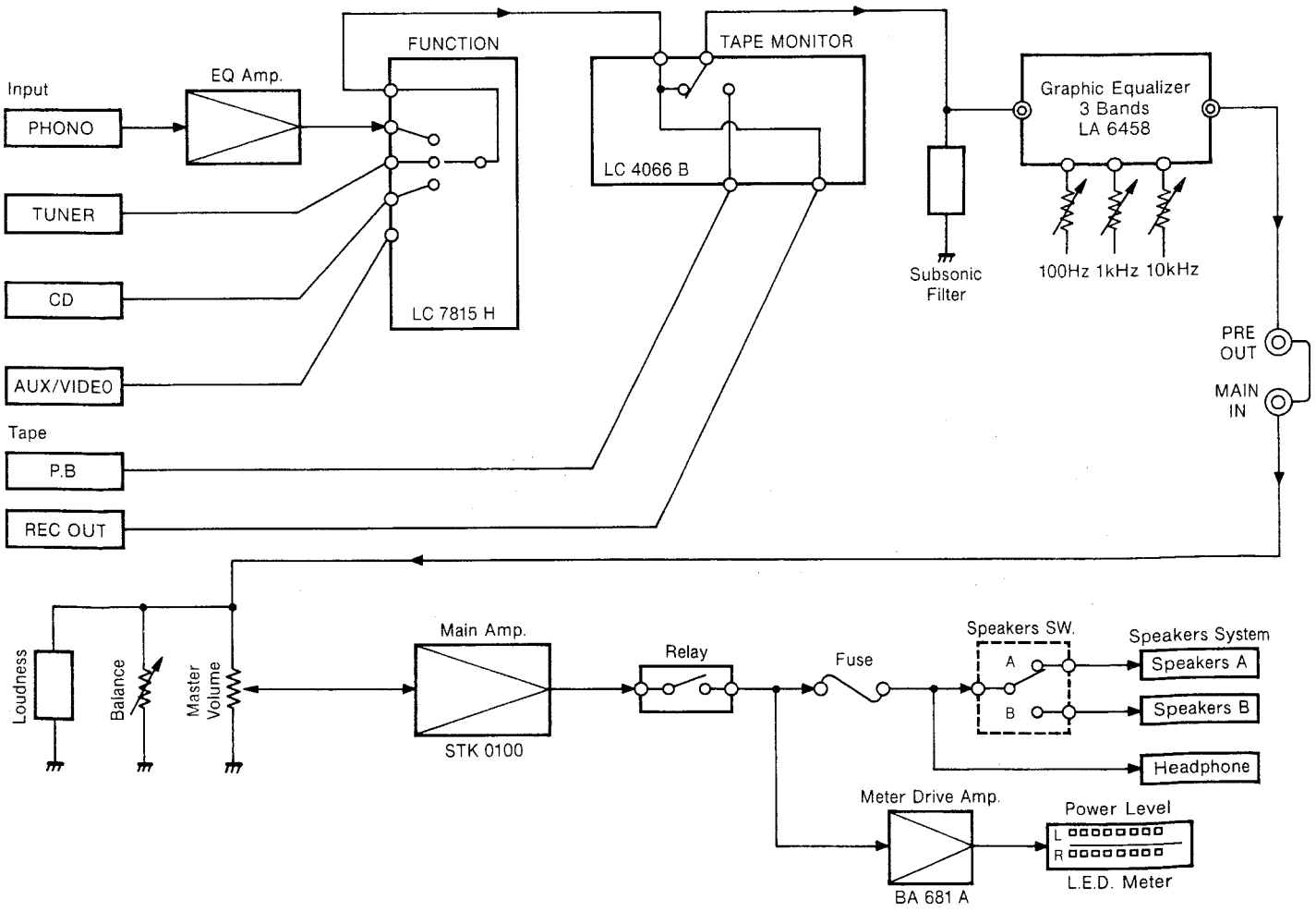


The first name in high fidelity

CONTENTS

Functional Block Diagram 2
Specifications 3
Disassembly Instructions 4
Recommended Test Equipments 4
Harmonic Distortion Test 5
Power Level Meter Adjustment 5
Cabinet & Chassis Exploded View 6
Parts List 7
Connecting Diagram 8
Automatic Function System and Synchro Recording 9
IC Equivalent Circuit & Block Diagram 9,10,11
Printed Circuit Board (Bottom View) 12,13,14,15,16,17
P.C.B.Assy Parts List 18,19,20,21,22
Point to Point Wiring Diagram 23,24
Schematic Diagram 25,26
Semiconductor Lead Identification 27

FUNCTIONAL BLOCK DIAGRAM



SPECIFICATIONS

AMPLIFIER		CA-275
POWER AMPLIFIER SECTION **Minimum RMS sine wave power per channel within stated bandwidth at no more than stated distortion and with 8-ohm load**		**100 Watts**
Power Bandwidth		**20 Hz – 20 kHz**
Total Harmonic Distortion		**0.09 %**
I.M. Distortion		0.09 %
Speaker Damping		> 20
PREAMPLIFIER SECTION Frequency Response	Phono (RIAA)	±0.5 dB
	Aux (20 Hz – 20 kHz)	±0.5 dB
Input Sensitivity and Impedance	Phono	2.5 mV/50 kΩ
	Tape Monitor	150 mV/50 kΩ
	Tuner/Auxiliary	150 mV/50 kΩ
Phono Max. Input Capability	Phono	125 mV
Graphic Equalizer	100 Hz	±10 dB
	1 kHz	±10 dB
	10 kHz	±10 dB
Subsonic Filter (Below 20 Hz)		12 dB/Oct.
Loudness Contour (100 Hz/10 kHz)		+8 dB/+4 dB
Hum & Noise (IHF Short Circuit, A Network)	Phono	70 dB
	Tape Monitor	90 dB
	Tuner/Auxiliary	95 dB
GENERAL Power Requirements (50 Hz)		110/120 V AC
Power Consumption		470 Watts
Dimensions (W x D x H)		440 x 268 x 108 mm
Weight (approx.)		8.3 kg

Because its products are subject to continuous improvement, Fisher Corporation reserves the right to modify product designs and specifications without notice and without incurring any obligation.

DISASSEMBLY INSTRUCTIONS

A. REMOVAL OF FRONT PANEL

1. Detach Cover by removing five screws.

2. Pull out GRAPHIC EQUALIZER Volume knobs (A). (Fig. 1)

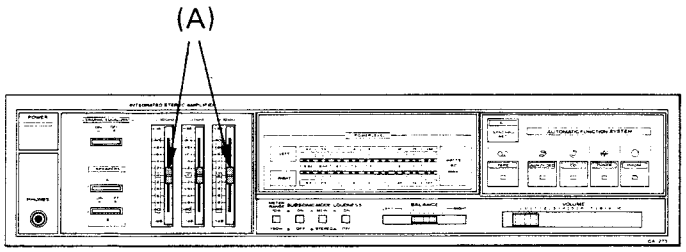


Fig. 1

3. Remove three screws (B) fastening Front Panel. (Fig. 2)

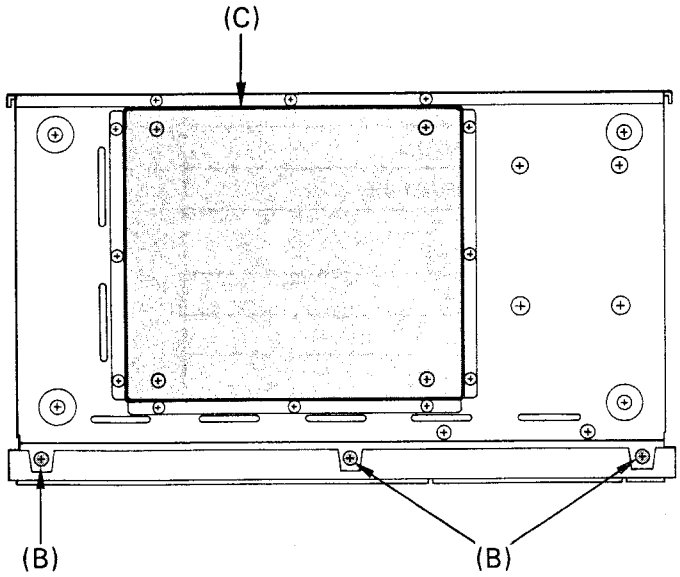


Fig. 2

4. Remove four screws (D) fastening Front Panel and then, pull Front Panel toward you. (Fig. 3)

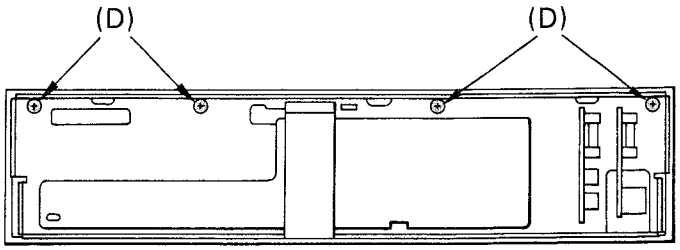


Fig. 3

B. REPAIR AND ADJUSTMENT OF PRINTED CIRCUIT BOARD

1. Pull out the top section of the front panel and perform the LED meter level adjustment. (Fig. 4)

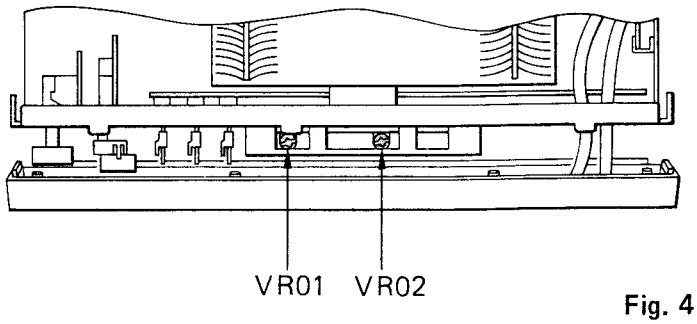


Fig. 4

2. The removal of Cabinet Bottom Cover (C) will give an access to the repair or adjustment work of Main Supply Printed Circuit Board. (Fig. 2)

RECOMMENDED TEST EQUIPMENTS

The following test equipments are recommended to completely test and align the Amplifier:

- Line Voltage Isolation Transformer
- AC DC Multimeter
- Accurately Calibrated AC Voltmeter
- Oscilloscope (Flat to 100 kHz Minimum)
- Low-Distortion Audio Sine-Wave Generator
- Harmonic Distortion Analyzer
- Two (2) Load Resistors 8-ohms, 250 Watts (Minimum Rating)

HARMONIC DISTORTION TEST

CAUTION: Limit the following tests to no more than ten minutes each. Use 8-ohm resistors, with a minimum power rating of 250 watts when connecting a load across the SPEAKERS terminal.

CONTROL SETTINGS:
Unplug the AC power cord and set the front panel controls as follows:

- GRAPHIC EQUALIZER and BALANCE controls to center positions.
- POWER switch to OFF
- SPEAKERS switch to SYSTEM-B
- FUNCTION switch to AUX
- LOUDNESS switch to OFF
- SUBSONIC FILTER to OFF
- VOLUME control to MINIMUM position
- LEFT CHANNEL DRIVEN

ONE CHANNEL DRIVEN:

1) Connect a low distortion audio generator to LEFT AUX IN jack. Set generator frequency to 1 kHz and output to minimum.
2) Connect an 8-ohm load resistor between SPEAKERS SYSTEM-A LEFT and COM terminals. Connect a Harmonic Distortion Analyzer and an AC VTVM in parallel across the 8-ohm load.
3) Connect the AC power cord and set SPEAKERS switch to SYSTEM-A. Turn VOLUME control to MAX.
4) Increase generator output for 100 Watts RMS (28.2 volts across the 8-ohm load). Harmonic Distortion Analyzer should measure 0.09 % distortion or less.
5) Repeat steps 1 through 4 for RIGHT CHANNEL.

BOTH CHANNELS DRIVEN

Connect 8-ohm load resistors across LEFT and RIGHT SPEAKERS SYSTEM-A terminals. Adjust generator output and "BALANCE" control for 100 Watts at Left and Right Channels (28.2 volts across the 8-ohm loads). Harmonic Distortion Analyzer should measure 0.09 % distortion or less at each channel.

POWER LEVEL METER ADJUSTMENT

When the components in IC01, 02 BA681A (LED Meter P.C.B.) and Power Amplifier Circuit have been replaced. Perform the level adjustment as follows:

CONTROL SETTINGS:
Set the front panel controls as follows:

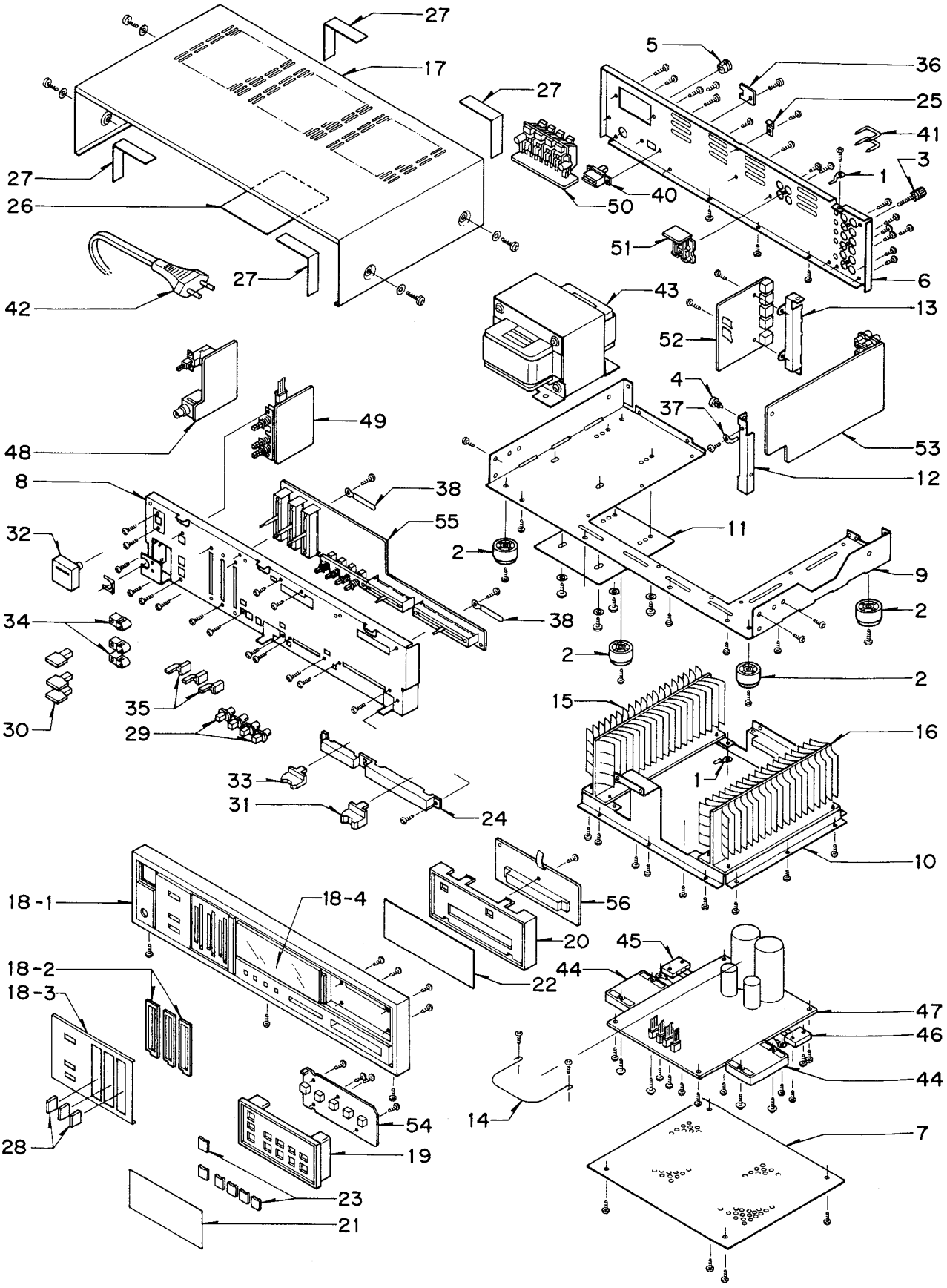
- METER RANGE Switch to 10 W position
  Set the other controls on the front panel to the same positions as specified for Harmonic Distortion Test.

ONE CHANNEL DRIVEN:

1) Connect a low distortion audio generator to LEFT AUX IN jack. Set generator frequency to 1 kHz and output to minimum.
2) Connect an 8-ohm load resistor between SPEAKERS SYSTEM-A LEFT and COM terminals. Connect an AC VTVM in parallel across the 8-ohm load.
3) Set SPEAKERS switch to SYSTEM-A. Turn VOLUME control to MAX.
4) Increase generator output for 20 mW (0.4 volts across the 8-ohm load.)
5) Adjust VR01 until the first LED indicator lights up.
6) Decrease generator output and make sure all LED indicators go out.
7) Repeat the same steps 1 through 6 for the RIGHT CHANNEL, except that VR02 is used in place of VR01 in item 5.

CAUTION: This precision high-fidelity instrument should be serviced only by qualified personnel, trained in the repair of transistor equipment and printed circuitry.

CABINET & CHASSIS EXPLODED VIEW



PARTS LIST

Ref. No.	Part No.	Description	Q'ty
	PACKING PARTS LIST		
	3 9415 10300	Bag Polyethylene	1
	131 6 2119 02091	Bag Polyethylene-EXP	1
	131 6 3069 16350	Patching Sheet	1
	131 6 9459 00300	Rubber Band	1
	141 6 1139 86201	Outer Carton	1
	141 6 1449 88000	Case Styrofoam (Left)	1
	141 6 1449 88001	Case Styrofoam (Right)	1
	ACCESSORIES PARTS LIST		
	131 6 2719 10801	Bag Fan	1
	131 6 4519 15700	Guarantee Certificate	1
	142 6 4119 31768	Explanatory Booklet	1
	CABINET & CHASSIS PARTS LIST		
1	4 2379 21522	Terminal Lug	2
2	131 2 1801 12900	Leg	4
3	131 2 4201 17800	Screw Ground	1
4	131 2 4221 00600	Rivet	1
5	131 2 6111 14200	Bushing (Line Cord)	1
6	141 2 1219 24801	Panel Rear	1
7	141 2 1259 05500	Bottom Cover	1
8	141 2 2149 20800	Chassis Front	1
9	141 2 3119 20000	Chassis	1
10	141 2 3129 04500	Sub Chassis	1
11	141 2 3159 03500	Metal Reinforce	1
12	141 2 3519 65900	Mount P.C.B.	1
13	141 2 3519 66000	Mount P.C.B.	1
14	141 2 3639 04600	Mount Condenser	1
15	141 2 3689 10800	Heat Sink (Left)	1
16	141 2 3689 10801	Heat Sink (Right)	1
17	131 2 1410 26504	Cover	1
18	141 0 1119 95500	Cabinet Front Assy	1
18-1	141 2 1119 92500	Cabinet Front	1
18-2	141 2 1329 12500	Sign Volume	3
18-3	141 2 1449 55400	Panel Control	1
18-4	131 2 1205 27300	Decorate Plate Dial	1
19	141 2 1149 31500	Mount Switch P.C.B.	1
20	141 2 1149 31600	Mount L.E.D. P.C.B.	1
21	141 2 1439 11600	Screen Switch	1
22	141 2 1449 55300	Index L.E.D.	1
23	141 2 1659 19100	Button Switch	6
24	141 2 2449 46600	Screen Volume	1
25	141 2 3159 03300	Bracket Cover	1
26	141 2 3229 44900	Plate Shield	1
27	141 2 3529 39600	Spacer	4
28	131 2 1601 69400	Knob (Tone)	3
29	131 2 1601 69600	Knob (Push Switch)	4
30	131 2 1601 70500	Knob (Speaker Switch)	3
31	131 2 1601 84700	Knob (Volume)	1
32	131 2 1601 85202	Knob (Power Switch)	1
33	131 2 1601 85300	Knob (Balance)	1
34	141 2 4629 01800	Joint Switch	3
35	141 2 5119 09500	Pointer Volume (Tone)	3
36	131 2 7104 00500	Plate Pad Switch	1
37	4 2379 21520	Terminal Lug	1
38	141 2 4729 04100	Lug	2
	ELECTRICAL PARTS LIST		
40 ⚠	4 2312 01020	Switch Slide (Voltage Select)	1
41	4 2369 74040	Short Plug	2
42 ⚠	4 2432 00200	Line Cord	1
43 ⚠	4 2512 20420	Power Trans	1
44	206 5 5200 10010	IC, STK 0100 (IC 01)	1
44	206 5 5200 10010	IC, STK 0100 (IC 02)	1
45	4 2039 71160	Transistor, 2SA 1095 O,Y (Q 01)	1
46	4 2039 71170	Transistor, 2SC 2565 O,Y (Q 02)	1
47	141 0 1939 00572	Main Supply P.C.B.Assy	1
48	141 0 1939 00582	Switch Fuse P.C.B.Assy	1
49	141 0 1939 00591	Speaker / Tone Switch P.C.B.Assy	1
50	141 0 1939 00602	Speaker Terminal P.C.B.Assy	1
51	141 0 1939 00610	RCA Jack P.C.B.Assy	1
52	141 0 1939 00620	Auto Function P.C.B.Assy	1
53	141 0 1939 00631	Input P.C.B.Assy	1
54	141 0 1939 00640	Function P.C.B.Assy	1
55	141 0 1939 00650	Tone P.C.B.Assy	1
56	141 0 1939 00660	L.E.D. Meter P.C.B.Assy	1
C01	CC1 0 3500 ZG00C	Ceramic 0.01μF 50V +80,-20%	1

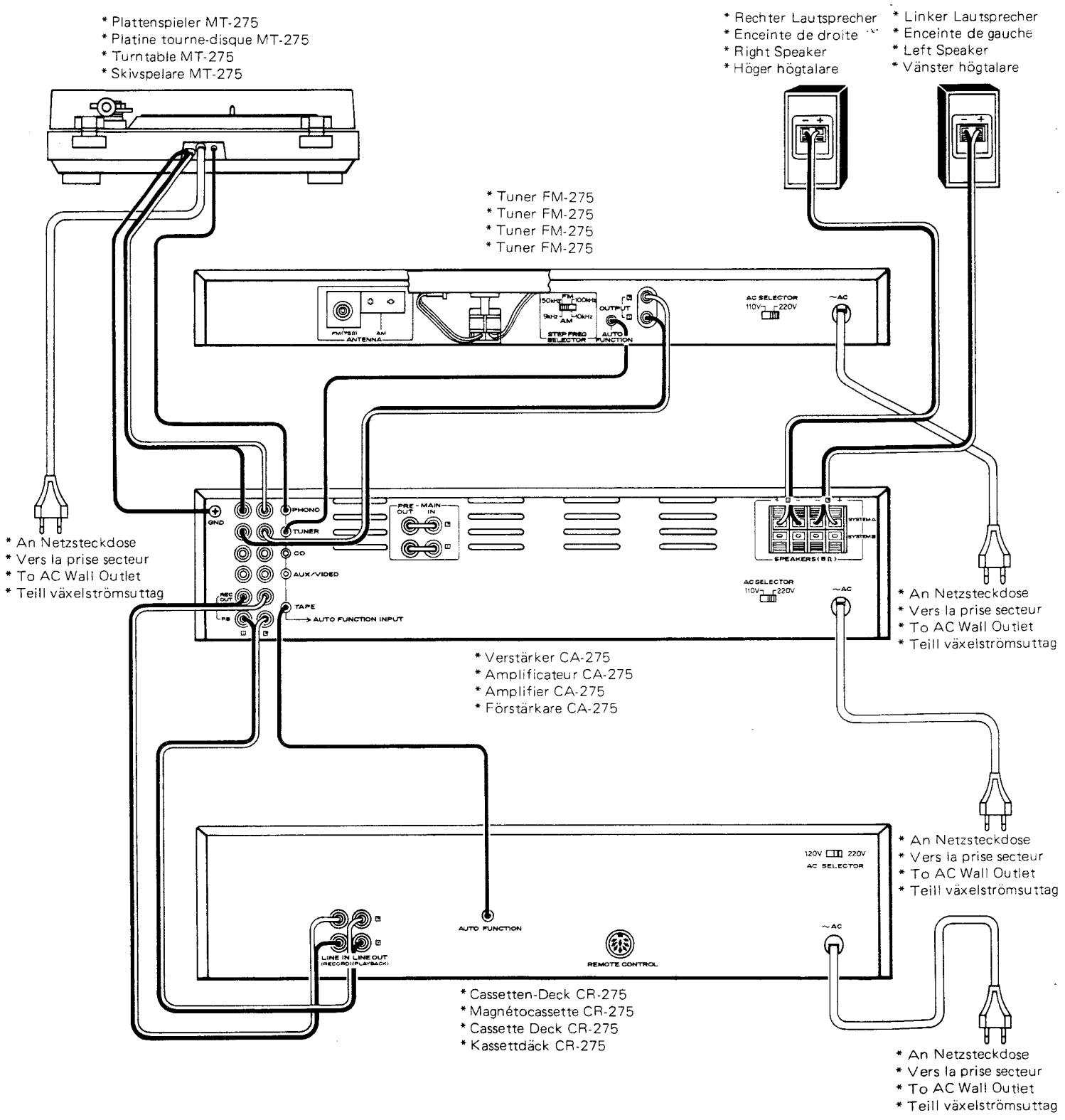
NOTES:

1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.
Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

CONNECTING DIAGRAM



AUTOMATIC FUNCTION SYSTEM and SYNCHRO RECORDING

When the amplifier CA-275 is used in combination with the optionally available tuner FM-275, turntable MT-275 and cassette deck CR-275, the automatic function and disc synchro (simultaneous) recording function can be used to full advantage.

AUTOMATIC FUNCTION SYSTEM:

Simply by pressing the desired preset station button on the tuner for radio reception, by pressing the START button on the turntable to listen to a record or by pressing the PLAY button on the cassette deck for tape playback, the amplifier's FUNCTION button and TAPE MONITOR button are automatically set to broadcast reception, record play or tape playback, respectively. In other words, it is not necessary to set the position of the FUNCTION button and TAPE MONITOR button each and every time.

- When the tuner's preset station button or turntable's START button is pressed while you are listening to a tape, the broadcast reception or record play mode is established. Simultaneously, the cassette deck's PLAY button is released, the PLAY indicator goes off and the tape stops.
- When the tuner's preset station button or cassette deck's PLAY button is pressed while you are listening to a record, the broadcast reception or tape play mode is established. Simultaneously, the turntable's tonearm rises from the record, " ⌜ " appears in the operation display window, the tonearm automatically returns to the arm rest and the platter stops rotating.

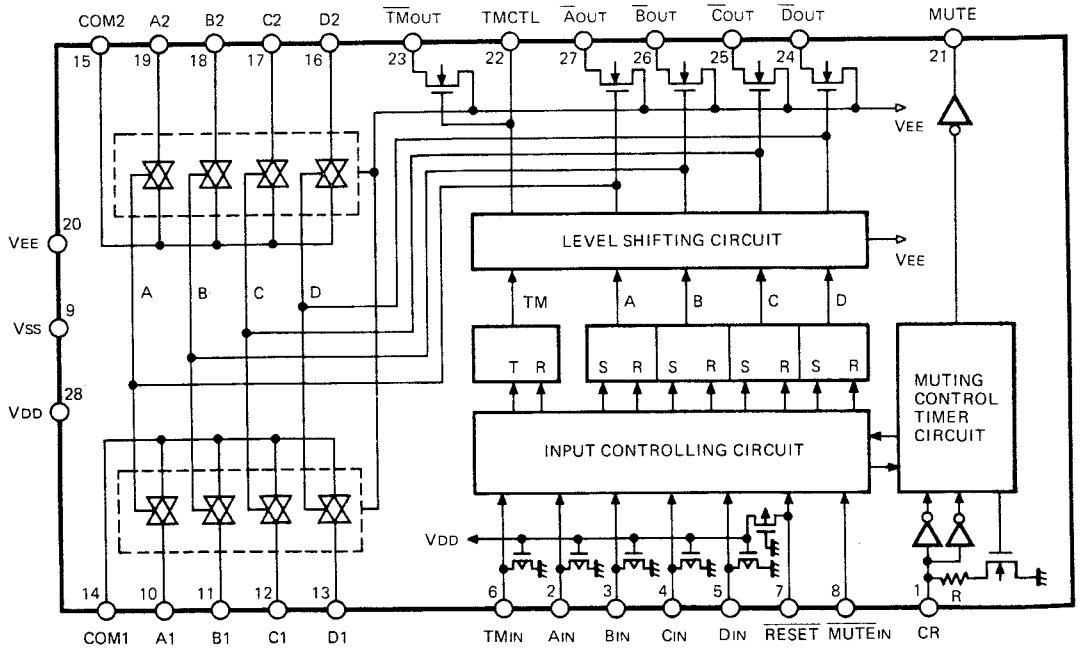
SYNCHRO RECORDING:

When music from the records is being recorded, the cassette deck's PAUSE button is released or activated in synchronization with the turntable's tonearm operation.

- When the turntable's START button is pressed and the tonearm lowered onto the record, the cassette deck's PAUSE button is released and the deck is set to the recording mode at the same time.
- When the turntable's CUEING button is pressed and the tonearm rises from the record, the cassette deck's PAUSE button is activated at the same time, the pause mode is established.
  When the CUEING button is pressed again and the tonearm descends onto the record, the PAUSE button is simultaneously released and the deck is returned to the recording mode.
- When the turntable's REJECT button is pressed and the tonearm rises from record, the cassette deck's PAUSE button is simultaneously activated, the deck is set to the pause mode. The tonearm returns to the arm rest and platter stops rotating. Operation is the same for auto return.

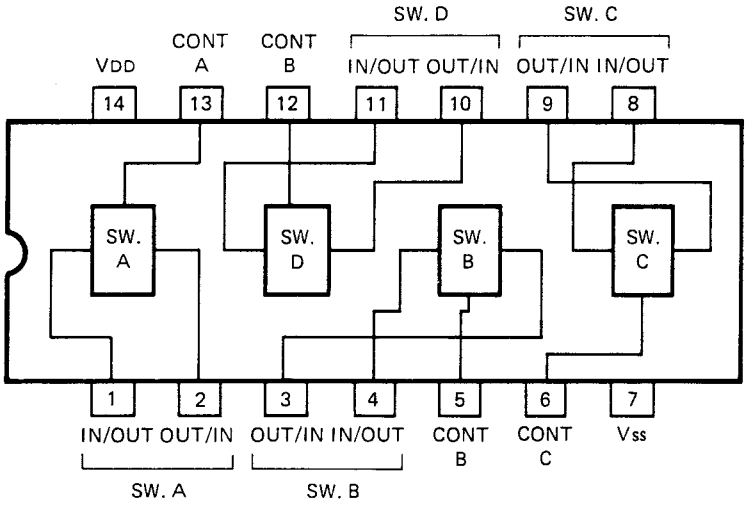
IC EQUIVALENT CIRCUIT & BLOCK DIAGRAM

FUNCTION ANALOG SWITCH IC LC 7815 H

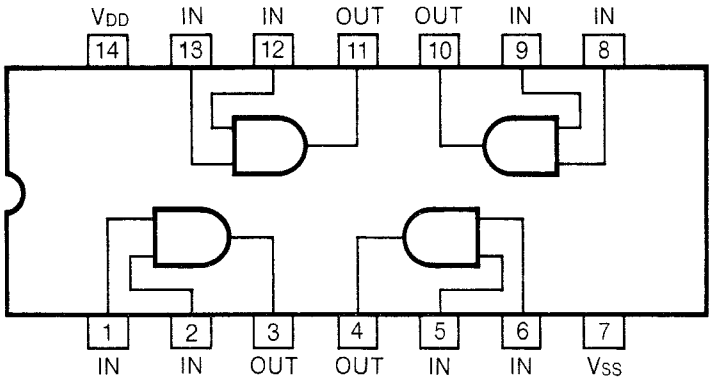

COM2 A2 B2 C2 D2 TMOUT TMCTL AOUT BOUT COUT DOUT MUTE
15 19 18 17 16 23 22 27 26 25 24 21
VEE
20
VEE
LEVEL SHIFTING CIRCUIT
VEE
A B C D
TM A B C D
9
VSS
T R S R S R S R S R
28
VDD
MUTING CONTROL TIMER CIRCUIT
INPUT CONTROLLING CIRCUIT
VDD
14 10 11 12 13 6 2 3 4 5 7 8 1
R
COM1 A1 B1 C1 D1 TMIN AIN BIN CIN DIN RESET MUTEIN CR

IC EQUIVALENT CIRCUIT & BLOCK DIAGRAM (Continued)

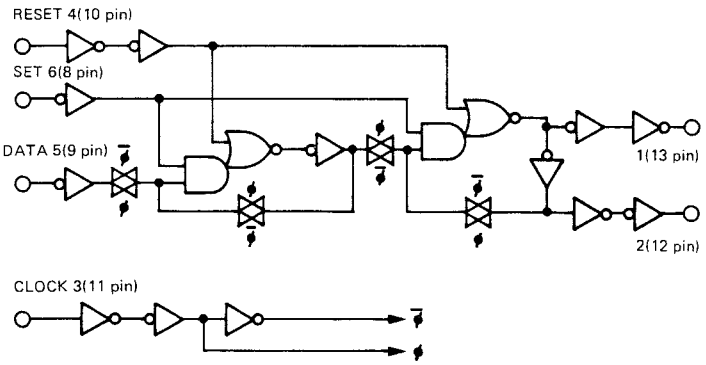
TAPE INPUT ANALOG SWITCH IC LC 4066 B

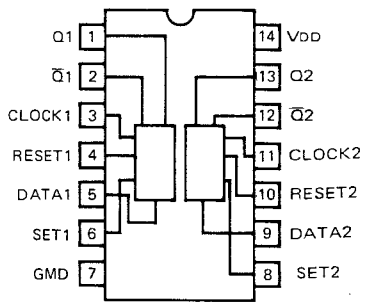


AUTO FUNCTION INPUT IC LC 4081 B



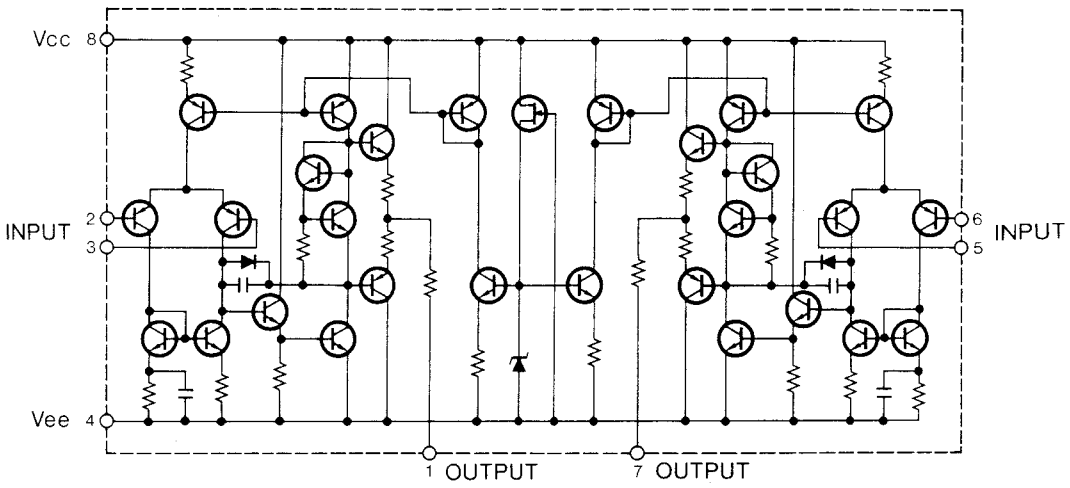
DUAL-A-TYPE FLIP-FLOP IC LC 4013 B



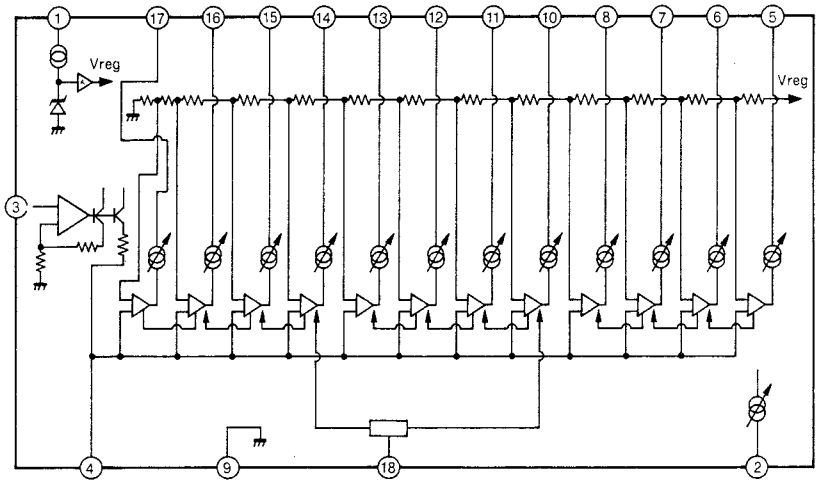


IC EQUIVALENT CIRCUIT & BLOCK DIAGRAM (Continued)

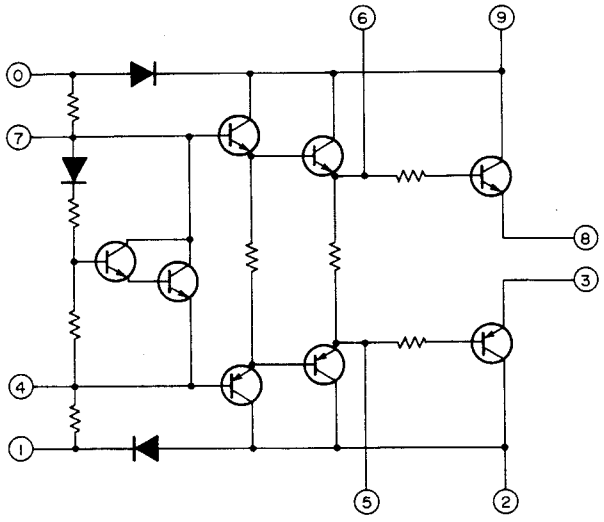
PHONO EQ/PREAMP IC LA 6458 D



L.E.D. LEVEL METER IC BA 681 A

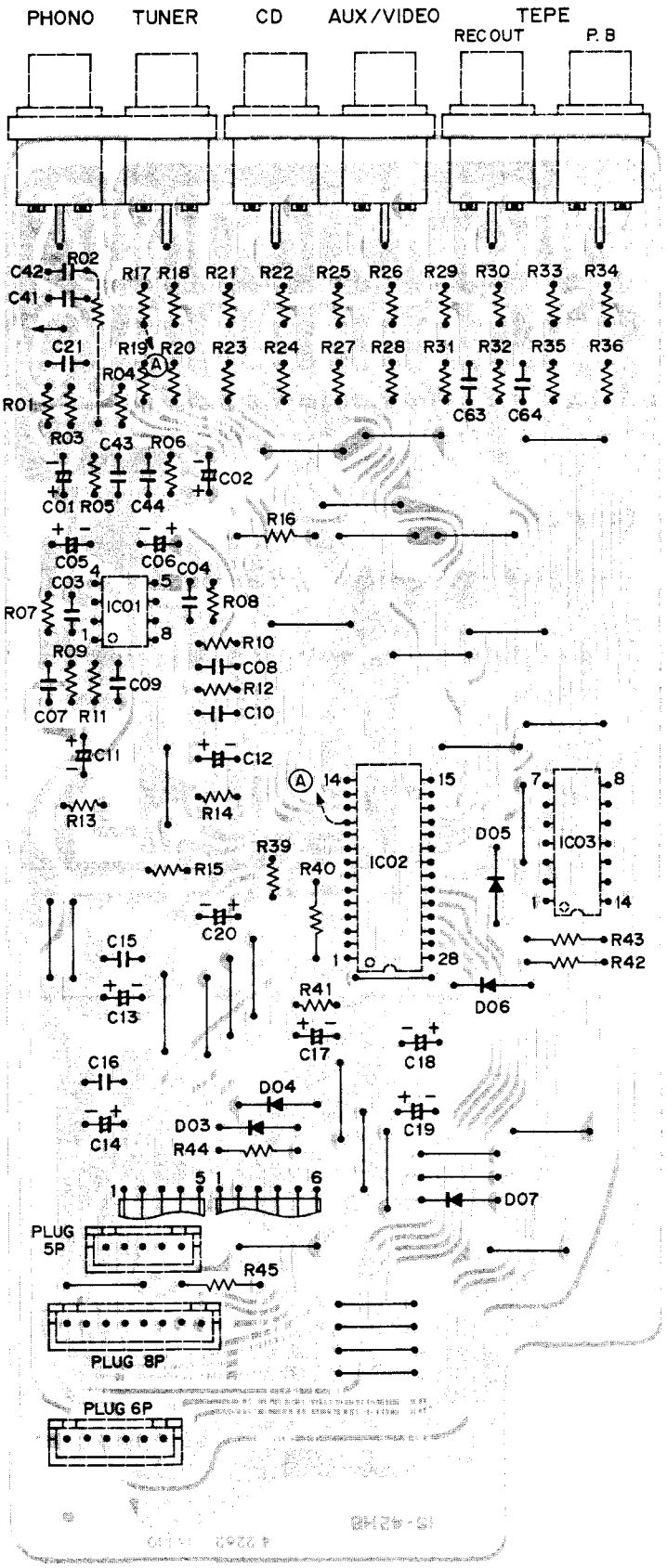


POWER AMP IC STK 0100



INPUT P.C.BOARD

(BOTTOM VIEW)

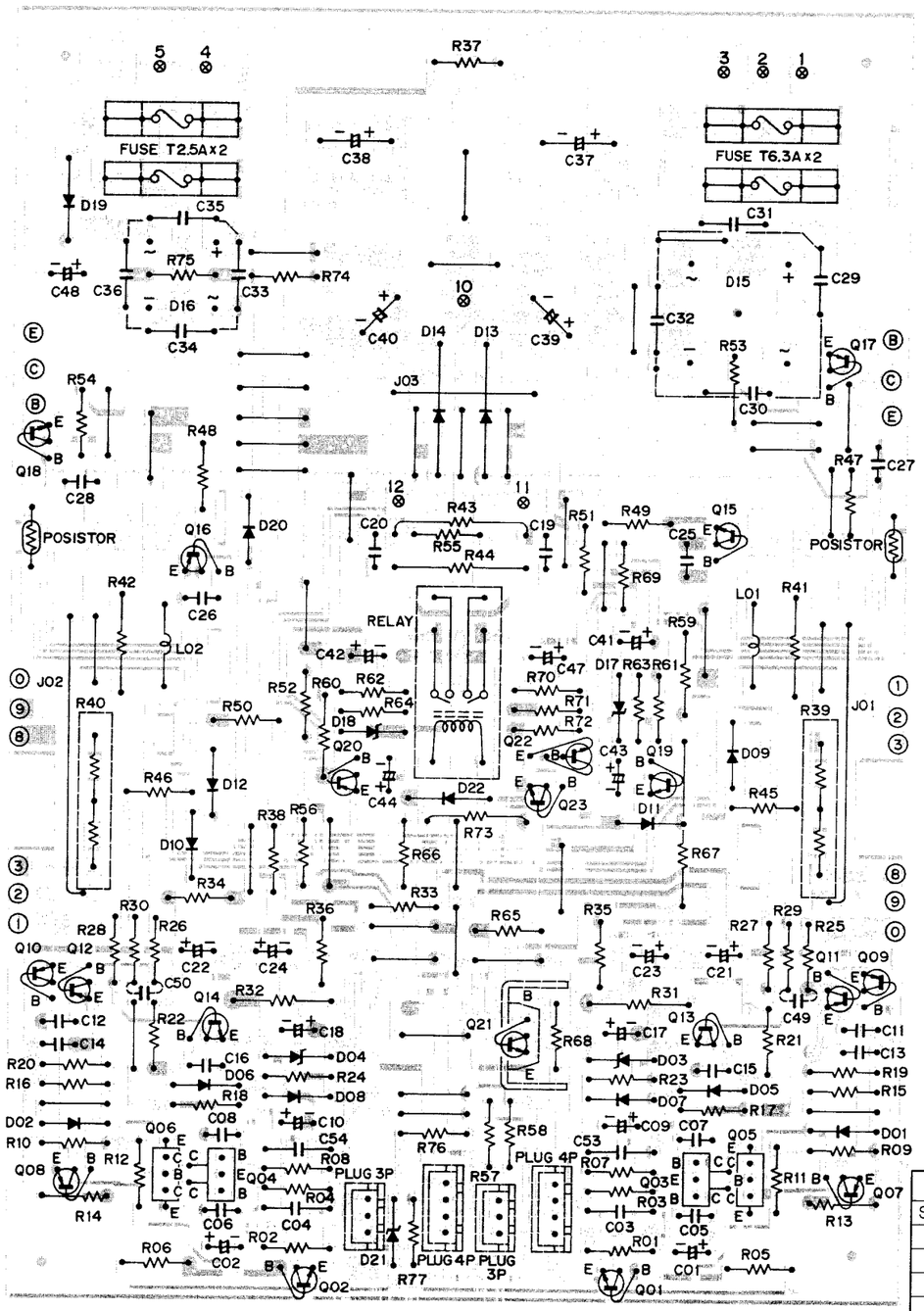


IC PIN NUMBERS DC VOLTAGES

SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
IC01	LA 6458	–2mV	10mV	10mV	–11.2V	10mV	10mV	–2mV	11.1V						
IC03	LC 4066 B	4mV	4mV	4mV	4mV	11.1V	11.1V	–11.2V	4mV	4mV	4mV	4mV	–11.2V	–11.2V	11.1V

MAIN SUPPLY P.C.BOARD

(BOTTOM VIEW)

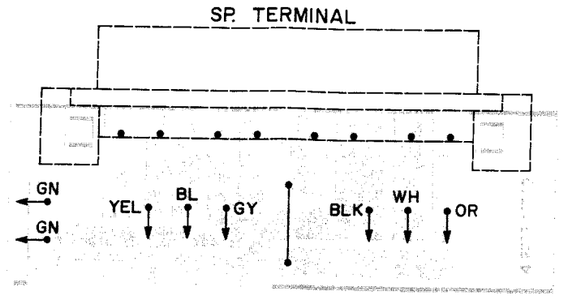


IC PIN NUMBERS DC VOLTAGES

SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10
IC01, 02	STK 0100	0.9V	−28V	1.1V	—	—	—	—	1.2V	27.8V	1.4V

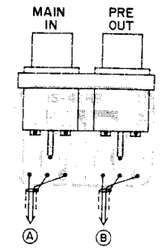
SPEAKER TERMINAL P.C.BOARD

(BOTTOM VIEW)



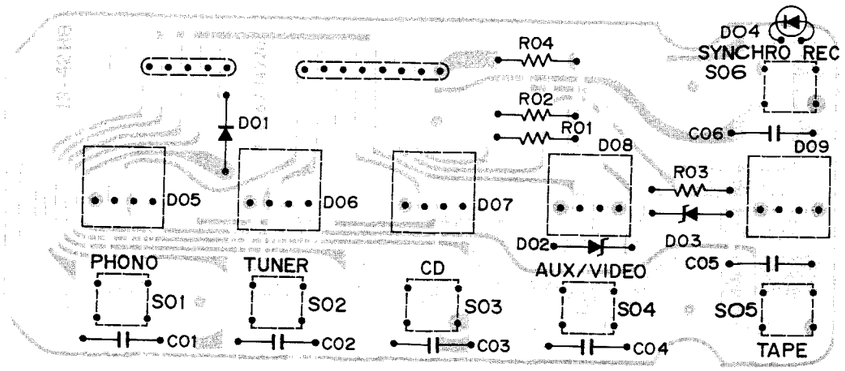
RCA JACK P.C.BOARD

(BOTTOM VIEW)



FUNCTION P.C.BOARD

(BOTTOM VIEW)

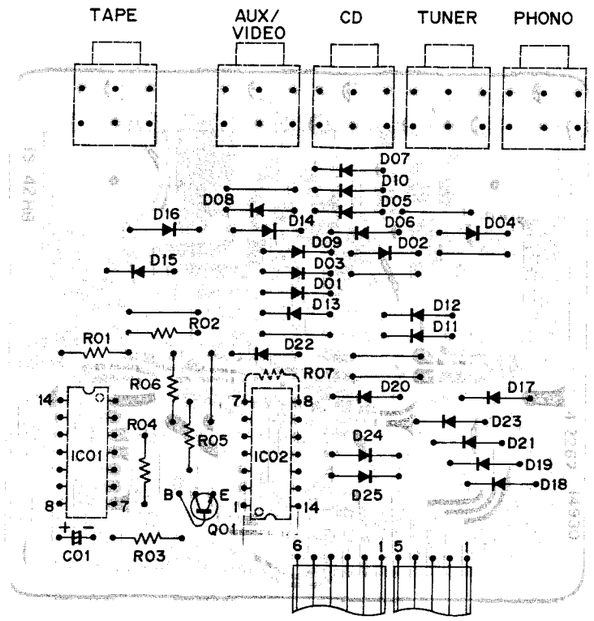


TRANSISTOR DC VOLTAGES (MAIN SUPPLY P.C.BOARD)

SYMBOL No.	DEVICE	B	C	E	SYMBOL No.	DEVICE	B	C	E
Q01, 02	2SD 1012	−1.0V	3mV	0V	Q16	2SB 560	−13.7V	−65.9V	−21.4V
Q03, 04	2SC 1583	−141mV	−140mV	−0.7V	Q17	2SB 631	66.0V	27.8V	65.6V
Q05, 06	2SC 2291	—	64.8V	−140mV	Q18	2SD 600	−65.9V	−28.0V	−66.0V
Q07, 08	2SA 608	65.3V	64.8V	65.9V	Q19	2SD 438	15.5V	21.9V	15.0V
Q09, 10	2SB 716 A	64.8V	1.5V	65.5V	Q20	2SB 560	−15.5V	−23.6V	−15.0V
Q11, 12	2SB 717	65.5V	1.5V	66.1V	Q21	2SD 325	15.0V	22.1V	14.5V
Q13, 14	2SD 757	−65.4V	0.9V	−65.4V	Q22	2SC 536	1.3V	0.8V	0.7V
Q15	2SD 438	14.1V	66V	21.3V	Q23	2SC 536	0.7V	80mV	0V

AUTO FUNCTION P.C.BOARD

(BOTTOM VIEW)



TRANSISTOR DC VOLTAGES				
SYMBOL No.	DEVICE	B	C	E
Q01	2SC 536	0.7V	37mV	0V

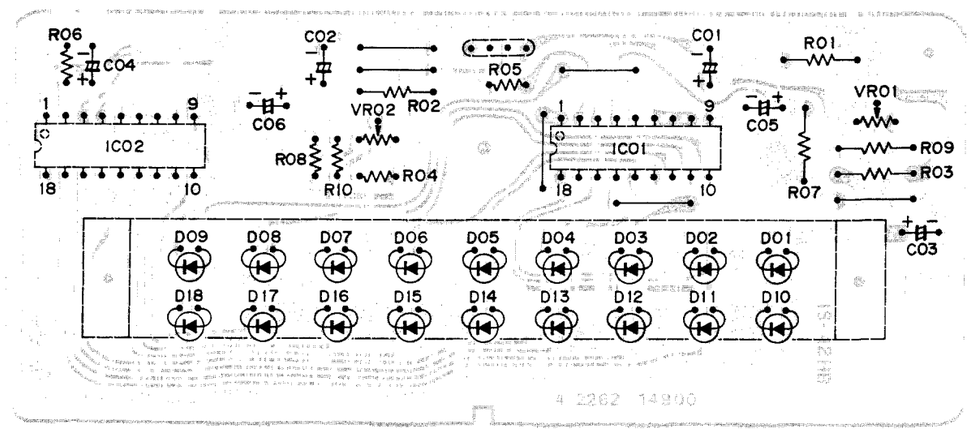
IC PIN NUMBERS DC VOLTAGES															
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
IC01	LC 4013	10.9V	3mV	3mV	3mV	0V	5mV	0V	11.1V	11.1V	11.1V	11.1V	–	–	11.1V
IC02	LC 4081	–	–	–	3mV	3mV	10.9V	0V	0.5V	11.1V	3mV	3mV	4mV	–0.6V	11.1V

TRANSISTOR DC VOLTAGES				
SYMBOL No.	DEVICE	B	C	E
Q01, 02	2SC 536	–0.6V	10.4V	–1.3V
Q03, 04	2SC 536	–0.2V	10.5V	–0.9V

IC PIN NUMBERS DC VOLTAGES															
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
IC01	LA 6458	14mV	4mV	11mV	–11.2V	11mV	–13mV	14mV	11.1V						
IC02	LC 4066	4mV	4mV	3mV	3mV	11.1V	11.1V	–11.2V	4mV	3mV	3mV	3mV	11.1V	11.1V	11.1V

L.E.D. METER P.C.BOARD

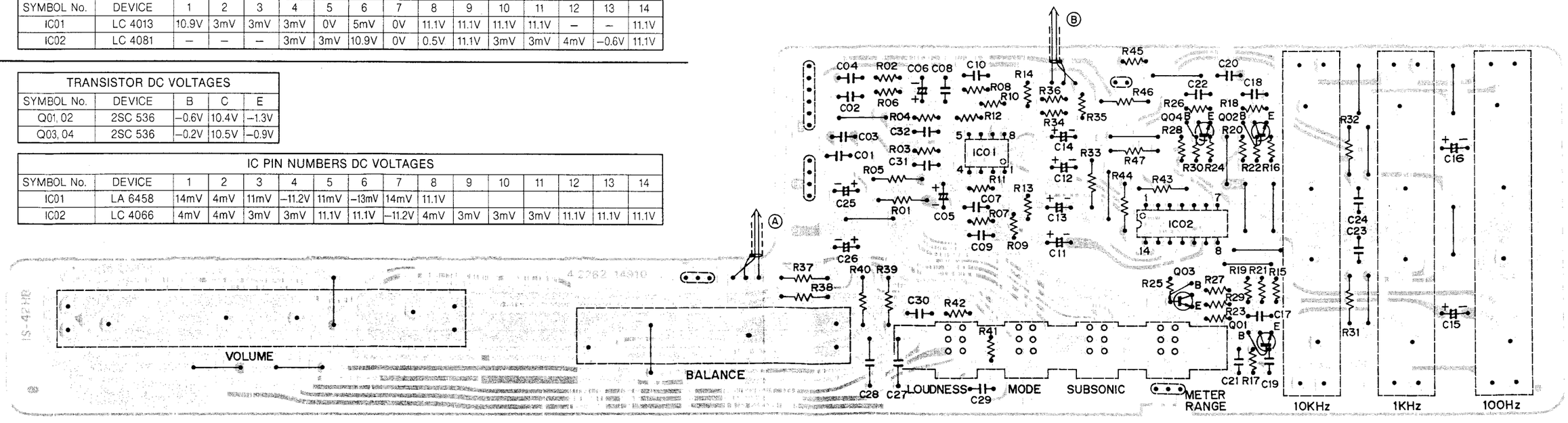
(BOTTOM VIEW)



IC PIN NUMBERS DC VOLTAGES																			
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
IC01, 02	BA 681	12.3V	6.1V	19mV	1.8V	10.3V	10.3V	10.3V	10.3V	0V	4.2V	6.3V	8.3V	10.4V	4.3V	6.3V	8.3V	10.4V	–

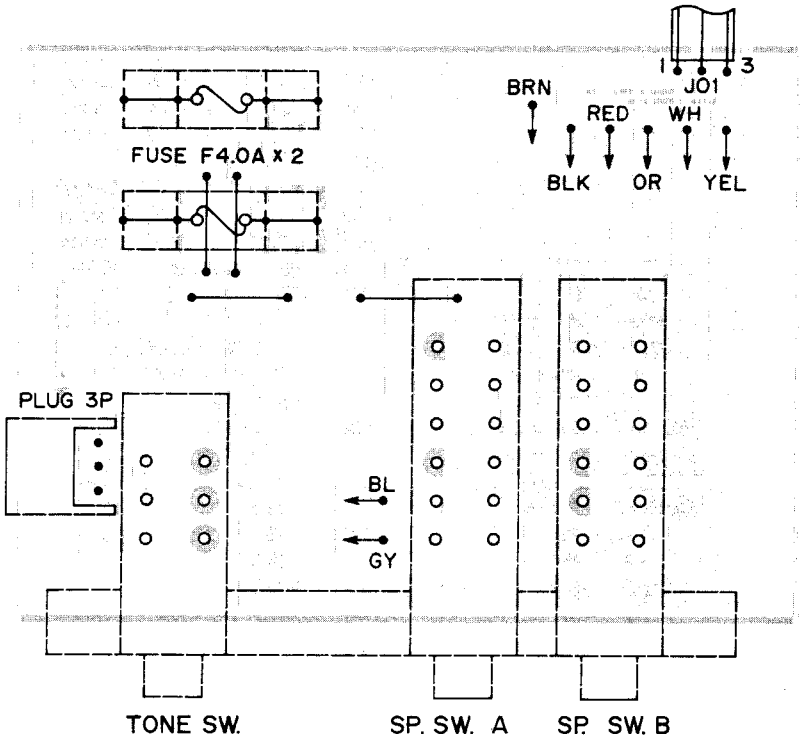
TONE P.C.BOARD

(BOTTOM VIEW)



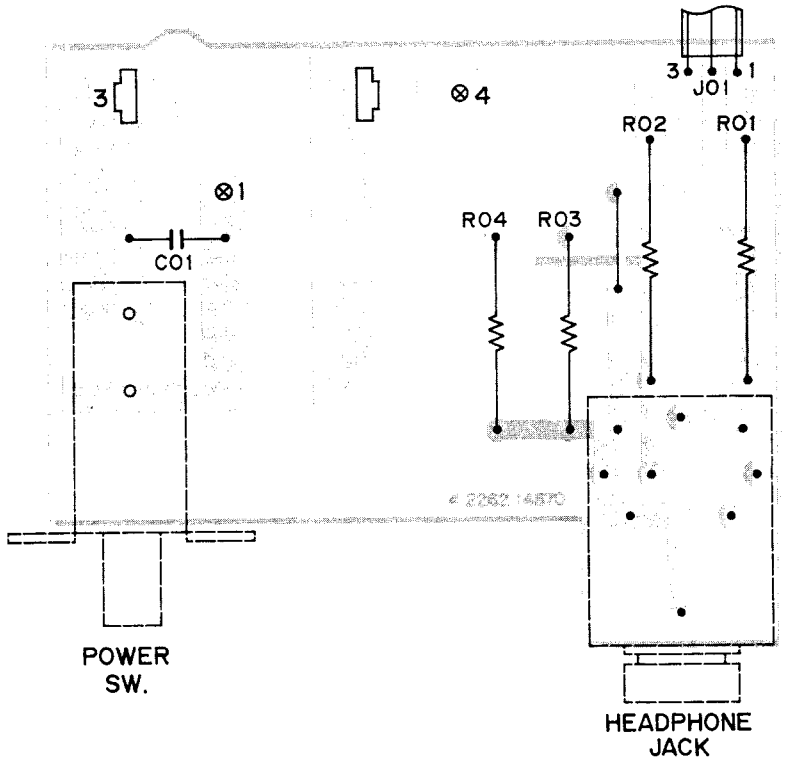
SPEAKER/TONE SW. P.C.BOARD

(BOTTOM VIEW)



SWITCH FUSE P.C.BOARD

(BOTTOM VIEW)



PARTS LIST

Ref. No.	Part No.	Description				Q'ty
	INPUT P.C.B.Assy					
	141 0 1939 00631	Input P.C.B.Assy				1
	4 2352 01700	Pin Jack 4P				3
	4 2362 00900	Plug 8P				1
	4 2369 73150	Connector 5P				1
	4 2369 73160	Connector 6P				1
	141 2 3229 44600	Plate Shield				1
	CAPACITORS					
C01	CD4 7 5250 0LR1V	Electrolytic	4.7μF	25V		1
C02	CD4 7 5250 0LR1V	Electrolytic	4.7μF	25V		1
C03	CC1 0 1500 KD00C	Ceramic	100pF	50V	±10%	1
C04	CC1 0 1500 KD00C	Ceramic	100pF	50V	±10%	1
C05	CD4 7 6160 0001V	Electrolytic	47μF	16V		1
C06	CD4 7 6160 0001V	Electrolytic	47μF	16V		1
C07	CM1 8 3500 K00SV	Mylar	0.018μF	50V	±10%	1
C08	CM1 8 3500 K00SV	Mylar	0.018μF	50V	±10%	1
C09	CM4 7 2500 K00SV	Mylar	0.0047μF	50V	±10%	1
C10	CM4 7 2500 K00SV	Mylar	0.0047μF	50V	±10%	1
C11	CD4 7 5250 0001V	Electrolytic	4.7μF	25V		1
C12	CD4 7 5250 0001V	Electrolytic	4.7μF	25V		1
C13	CD1 0 7160 0001V	Electrolytic	100μF	16V		1
C14	CD1 0 7160 0001V	Electrolytic	100μF	16V		1
C15	CC1 0 3500 ZG00C	Ceramic	0.01μF	50V	+80,-20%	1
C16	CC1 0 3500 ZG00C	Ceramic	0.01μF	50V	+80,-20%	1
C17	CD2 2 5160 0001V	Electrolytic	2.2μF	16V		1
C18	CD1 0 8160 0001V	Electrolytic	1000μF	16V		1
C19	CD4 7 6160 0001V	Electrolytic	47μF	16V		1
C20	CD1 0 4500 0001V	Electrolytic	0.1μF	50V		1
C21	CC1 0 3500 ZG00C	Ceramic	0.01μF	50V	+80,-20%	1
C41	CC2 2 1500 KD00C	Ceramic	220pF	50V	±10%	1
C42	CC2 2 1500 KD00C	Ceramic	220pF	50V	±10%	1
C43	CC2 2 1500 KD00C	Ceramic	220pF	50V	±10%	1
C44	CC2 2 1500 KD00C	Ceramic	220pF	50V	±10%	1
C63	CC2 2 1500 KD00C	Ceramic	220pF	50V	±10%	1
C64	CC2 2 1500 KD00C	Ceramic	220pF	50V	±10%	1
	SEMICONDUCTORS					
D03	205 5 9040 44210	Diode, DS 442				1
D04	205 5 9040 44210	Diode, DS 442				1
D05	205 5 9040 44210	Diode, DS 442				1
D06	205 5 9040 44210	Diode, DS 442				1
D07	205 5 9040 44210	Diode, DS 442				1
IC01	IJJ - NJM072D-E	IC, NJM 072 D,E				1
IC02	206 5 8897 81520	IC, LC 7815 H				1
IC03	206 5 8144 06610	IC, LC 4066 B				1
	RESISTORS					
R01	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R02	RD1 0 2251 JM000	Carbon	1kΩ	1/4W	±5%	1
R03	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R04	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R05	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R06	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R07	RD3 3 1161 JH000	Carbon	330Ω	1/6W	±5%	1
R08	RD3 3 1161 JH000	Carbon	330Ω	1/6W	±5%	1
R09	RD2 2 4161 JH000	Carbon	220kΩ	1/6W	±5%	1
R10	RD2 2 4161 JH000	Carbon	220kΩ	1/6W	±5%	1
R11	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R12	RD1 5 3161 JH000	Carbon	15kΩ	1/6W	±5%	1
R13	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R14	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R15	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R16	RD1 0 2251 JM000	Carbon	1kΩ	1/4W	±5%	1

Ref. No.	Part No.	Description				Q'ty
R17	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R18	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R19	RD1 8 4161 JH000	Carbon	180kΩ	1/6W	±5%	1
R20	RD1 8 4161 JH000	Carbon	180kΩ	1/6W	±5%	1
R21	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R22	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R23	RD1 8 4161 JH000	Carbon	180kΩ	1/6W	±5%	1
R24	RD1 8 4161 JH000	Carbon	180kΩ	1/6W	±5%	1
R25	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R26	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R27	RD1 8 4161 JH000	Carbon	180kΩ	1/6W	±5%	1
R28	RD1 8 4161 JH000	Carbon	180kΩ	1/6W	±5%	1
R29	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R30	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R31	RD1 8 4161 JH000	Carbon	180kΩ	1/6W	±5%	1
R32	RD1 8 4161 JH000	Carbon	180kΩ	1/6W	±5%	1
R33	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R34	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R35	RD8 2 3161 JH000	Carbon	82kΩ	1/6W	±5%	1
R36	RD8 2 3161 JH000	Carbon	82kΩ	1/6W	±5%	1
R39	RD5 6 3161 JH000	Carbon	56kΩ	1/6W	±5%	1
R40	RD1 0 2251 JM000	Carbon	1kΩ	1/4W	±5%	1
R41	RD2 2 4161 JH000	Carbon	220kΩ	1/6W	±5%	1
R42	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R43	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R44	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R45	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
	AUTO FUNCTION P.C.B.Assy					
	141 0 1939 00620	Auto Function P.C.B.Assy				1
	4 2352 01730	Jack 3P				5
	CAPACITOR					
C01	CD2 2 5500 0001V	Electrolytic	2.2μF	50V		1
	SEMICONDUCTORS					
D01	205 5 9040 44210	Diode, DS 442				1
D02	205 5 9040 44210	Diode, DS 442				1
D03	205 5 9040 44210	Diode, DS 442				1
D04	205 5 9040 44210	Diode, DS 442				1
D05	205 5 9040 44210	Diode, DS 442				1
D06	205 5 9040 44210	Diode, DS 442				1
D07	205 5 9040 44210	Diode, DS 442				1
D08	205 5 9040 44210	Diode, DS 442				1
D09	205 5 9040 44210	Diode, DS 442				1
D10	205 5 9040 44210	Diode, DS 442				1
D11	205 5 9040 44210	Diode, DS 442				1
D12	205 5 9040 44210	Diode, DS 442				1
D13	205 5 9040 44210	Diode, DS 442				1
D14	205 5 9040 44210	Diode, DS 442				1
D15	205 5 9040 44210	Diode, DS 442				1
D16	205 5 9040 44210	Diode, DS 442				1
D17	205 5 9040 44210	Diode, DS 442				1
D18	205 5 9040 44210	Diode, DS 442				1
D19	205 5 9040 44210	Diode, DS 442				1
D20	205 5 9040 44210	Diode, DS 442				1
D21	205 5 9040 44210	Diode, DS 442				1
D22	205 5 9040 44210	Diode, DS 442				1
D23	205 5 9040 44210	Diode, DS 442				1
D24	205 5 9040 44210	Diode, DS 442				1
D25	205 5 9040 44210	Diode, DS 442				1

PARTS LIST (Continued)

Ref. No.	Part No.	Description				Q'ty
IC01	206 5 9464 01310	IC, LC 4013 B				1
IC02	206 5 9494 08110	IC, LC 4081 B				1
Q01	203 5 5000 53660	Transistor, 2SC 536 F,G				1
	RESISTORS					
R01	RD1 0 4251 JM000	Carbon	100kΩ	1/4W	±5%	1
R02	RD1 0 4251 JM000	Carbon	100kΩ	1/4W	±5%	1
R03	RD5 6 3251 JM000	Carbon	56kΩ	1/4W	±5%	1
R04	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R05	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R06	RD4 7 2251 JM000	Carbon	4.7kΩ	1/4W	±5%	1
R07	RD4 7 3251 JN000	Carbon	47kΩ	1/4W	±5%	1
	FUNCTION P.C.B.Assy					
	141 0 1939 00640	Function P.C.B.Assy				1
	4 2312 05300	Keyboard Switch 6 mm				6
	4 2359 74862	Connector 8P Assy				1
	4 2359 75984	Connector 5P Assy				1
	CAPACITORS					
C01	CI1 0 3250 MF00R	Boundary	0.01μF	25V	±20%	1
C02	CI1 0 3250 MF00R	Boundary	0.01μF	25V	±20%	1
C03	CI1 0 3250 MF00R	Boundary	0.01μF	25V	±20%	1
C04	CI1 0 3250 MF00R	Boundary	0.01μF	25V	±20%	1
C05	CI1 0 3250 MF00R	Boundary	0.01μF	25V	±20%	1
C06	CI1 0 3250 MF00R	Boundary	0.01μF	25V	±20%	1
	SEMICONDUCTORS					
D01	205 5 9040 44210	Diode, DS 442				1
D02	202 5 3210 10011	Zener Diode, GZA 10 X				1
D03	202 5 3210 10011	Zener Diode, GZA 10 X				1
D04	D00 - SLP- 173B-	L.E.D., SLP 173 B				1
D05	4 2029 72590	L.E.D., SLF 202 B				1
D06	4 2029 72590	L.E.D., SLF 202 B				1
D07	4 2029 72590	L.E.D., SLF 202 B				1
D08	4 2029 72590	L.E.D., SLF 202 B				1
D09	4 2029 72600	L.E.D., SLF 102 B				1
	RESISTORS					
R01	RD5 6 1251 JM000	Carbon	560Ω	1/4W	±5%	1
R02	RD1 2 2251 JM000	Carbon	1.2kΩ	1/4W	±5%	1
R03	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R04	RD1 2 2251 JM000	Carbon	1.2kΩ	1/4W	±5%	1
	TONE P.C.B.Assy					
	141 0 1939 00650	Tone P.C.B.Assy				1
	4 2229 74170	VR Slide 250kΩ-SWx2				3
	4 2229 74180	VR Slide 200kΩ-Wx1				1
	4 2229 74190	VR Slide 100kΩ-Ax2				1
	4 2319 76330	Switch Push 4 Key				1
	4 2359 75896	Connector 6P Assy				1
	4 2359 76018	Connector 3P Assy				1
	4 2359 76019	Connector 3P Assy				1
	4 2359 76054	Connector 4P Assy				1
	4 2359 76350	Connector 3P Assy				1
	CAPACITORS					
C01	CM1 0 4500 J00TV	Mylar	0.1μF	50V	±5%	1
C02	CM1 0 4500 J00TV	Mylar	0.1μF	50V	±5%	1
C03	CM1 0 4500 J00TV	Mylar	0.1μF	50V	±5%	1
C04	CM1 0 4500 J00TV	Mylar	0.1μF	50V	±5%	1
C05	CD4 7 5250 0001V	Electrolytic	4.7μF	25V		1
C06	CD4 7 5250 0001V	Electrolytic	4.7μF	25V		1

Ref. No.	Part No.	Description				Q'ty
C07	CC1 0 1500 KD00C	Ceramic	100pF	50V	±10%	1
C08	CC1 0 1500 KD00C	Ceramic	100pF	50V	±10%	1
C09	CC1 0 0500 DD00C	Ceramic	10pF	50V	±0.5pF	1
C10	CC1 0 0500 DD00C	Ceramic	10pF	50V	±0.5pF	1
C11	CD1 0 6160 0001V	Electrolytic	10μF	16V		1
C12	CD1 0 6160 0001V	Electrolytic	10μF	16V		1
C13	CD4 7 5250 0001V	Electrolytic	4.7μF	25V		1
C14	CD4 7 5250 0001V	Electrolytic	4.7μF	25V		1
C15	CD2 2 6160 0001V	Electrolytic	22μF	16V		1
C16	CD2 2 6160 0001V	Electrolytic	22μF	16V		1
C17	CM1 8 3500 K00SV	Mylar	0.018μF	50V	±10%	1
C18	CM1 8 3500 K00SV	Mylar	0.018μF	50V	±10%	1
C19	CM1 2 4500 J00TV	Mylar	0.12μF	50V	±5%	1
C20	CM1 2 4500 J00TV	Mylar	0.12μF	50V	±5%	1
C21	CM4 7 2500 K00SV	Mylar	0.0047μF	50V	±10%	1
C22	CM4 7 2500 K00SV	Mylar	0.0047μF	50V	±10%	1
C23	CM1 5 3500 K00SV	Mylar	0.015μF	50V	±10%	1
C24	CM1 5 3500 K00SV	Mylar	0.015μF	50V	±10%	1
C25	CD2 2 7160 0001V	Electrolytic	220μF	16V		1
C26	CD2 2 7160 0001V	Electrolytic	220μF	16V		1
C27	CC2 2 1500 KE00R	Ceramic	220pF	50V	±10%	1
C28	CC2 2 1500 KE00R	Ceramic	220pF	50V	±10%	1
C29	CM4 7 3500 K00SV	Mylar	0.047μF	50V	±10%	1
C30	CM4 7 3500 K00SV	Mylar	0.047μF	50V	±10%	1
C31	CC1 0 1500 KD00C	Ceramic	100pF	50V	±10%	1
C32	CC1 0 1500 KD00C	Ceramic	100pF	50V	±10%	1
	SEMICONDUCTORS					
IC01	206 5 2726 45810	IC, LA 6458 DS				1
IC02	206 5 8144 06610	IC, LC 4066 B				1
Q01	203 5 5000 53660	Transistor, 2SC 536 F,G				1
Q02	203 5 5000 53660	Transistor, 2SC 536 F,G				1
Q03	203 5 5000 53660	Transistor, 2SC 536 F,G				1
Q04	203 5 5000 53660	Transistor, 2SC 536 F,G				1
	RESISTORS					
R01	RD1 0 2251 JM000	Carbon	1kΩ	1/4W	±5%	1
R02	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R03	RD1 5 4161 JH000	Carbon	150kΩ	1/6W	±5%	1
R04	RD1 5 4161 JH000	Carbon	150kΩ	1/6W	±5%	1
R05	RD5 6 3251 JM000	Carbon	56kΩ	1/4W	±5%	1
R06	RD5 6 3161 JH000	Carbon	56kΩ	1/6W	±5%	1
R07	RD4 7 2161 JH000	Carbon	4.7kΩ	1/6W	±5%	1
R08	RD4 7 2161 JH000	Carbon	4.7kΩ	1/6W	±5%	1
R09	RD4 7 1161 JH000	Carbon	470Ω	1/6W	±5%	1
R10	RD4 7 1161 JH000	Carbon	470Ω	1/6W	±5%	1
R11	RD1 2 2161 JH000	Carbon	1.2kΩ	1/6W	±5%	1
R12	RD1 2 2161 JH000	Carbon	1.2kΩ	1/6W	±5%	1
R13	RD4 7 2161 JH000	Carbon	4.7kΩ	1/6W	±5%	1
R14	RD4 7 2161 JH000	Carbon	4.7kΩ	1/6W	±5%	1
R15	RD8 2 1161 JH000	Carbon	820Ω	1/6W	±5%	1
R16	RD8 2 1161 JH000	Carbon	820Ω	1/6W	±5%	1
R17	RD3 9 1161 JH000	Carbon	390Ω	1/6W	±5%	1
R18	RD3 9 1161 JH000	Carbon	390Ω	1/6W	±5%	1
R19	RD1 2 4161 JH000	Carbon	120kΩ	1/6W	±5%	1
R20	RD1 2 4161 JH000	Carbon	120kΩ	1/6W	±5%	1
R21	RD6 8 2161 JH000	Carbon	6.8kΩ	1/6W	±5%	1
R22	RD6 8 2161 JH000	Carbon	6.8kΩ	1/6W	±5%	1
R23	RD1 2 2161 JH000	Carbon	1.2kΩ	1/6W	±5%	1
R24	RD1 2 2161 JH000	Carbon	1.2kΩ	1/6W	±5%	1
R25	RD3 9 1161 JH000	Carbon	390Ω	1/6W	±5%	1
R26	RD3 9 1161 JH000	Carbon	390Ω	1/6W	±5%	1
R27	RD3 9 3161 JH000	Carbon	39kΩ	1/6W	±5%	1
R28	RD3 9 3161 JH000	Carbon	39kΩ	1/6W	±5%	1

PARTS LIST (Continued)

Ref. No.	Part No.	Description				Q'ty
R29	RD6 8 2161 JH000	Carbon	6.8kΩ	1/6W	±5%	1
R30	RD6 8 2161 JH000	Carbon	6.8kΩ	1/6W	±5%	1
R31	RD1 2 2251 JM000	Carbon	1.2kΩ	1/4W	±5%	1
R32	RD1 2 2251 JM000	Carbon	1.2kΩ	1/4W	±5%	1
R33	RD1 0 2251 JM000	Carbon	1kΩ	1/4W	±5%	1
R34	RD1 0 2161 JH000	Carbon	1kΩ	1/6W	±5%	1
R35	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R36	RD1 0 4161 JH000	Carbon	100kΩ	1/6W	±5%	1
R37	RD1 0 2251 JM000	Carbon	1kΩ	1/4W	±5%	1
R38	RD1 0 2251 JM000	Carbon	1kΩ	1/4W	±5%	1
R39	RD3 3 2251 JM000	Carbon	3.3kΩ	1/4W	±5%	1
R40	RD3 3 2251 JM000	Carbon	3.3kΩ	1/4W	±5%	1
R41	RD5 6 2161 JH000	Carbon	5.6kΩ	1/6W	±5%	1
R42	RD5 6 2161 JH000	Carbon	5.6kΩ	1/6W	±5%	1
R43	RD1 2 3251 JM000	Carbon	12kΩ	1/4W	±5%	1
R44	RD1 2 3251 JM000	Carbon	12kΩ	1/4W	±5%	1
R45	RD1 2 3161 JH000	Carbon	12kΩ	1/6W	±5%	1
R46	RD2 7 0251 JM000	Carbon	27Ω	1/4W	±5%	1
R47	RD2 7 0251 JM000	Carbon	27Ω	1/4W	±5%	1
	L.E.D. METER P.C.B.Assy					
	141 0 1939 00660	L.E.D. Meter P.C.B.Assy				1
	4 2359 76053	Connector 4P Assy				1
	141 2 2419 28800	Shelter (L.E.D.)				1
	141 2 3769 14800	Spacer (L.E.D.)				1
VR01	4 2229 74041	Potentiometer 500Ω				1
VR02	4 2229 74041	Potentiometer 500Ω				1
	CAPACITORS					
C01	CD2 2 5500 0001V	Electrolytic	2.2μF	50V		1
C02	CD2 2 5500 0001V	Electrolytic	2.2μF	50V		1
C03	CD1 0 6160 0001V	Electrolytic	10μF	16V		1
C04	CD1 0 6160 0001V	Electrolytic	10μF	16V		1
C05	CD1 0 6160 0001V	Electrolytic	10μF	16V		1
C06	CD1 0 6160 0001V	Electrolytic	10μF	16V		1
	SEMICONDUCTORS					
D01	4 2029 72670	L.E.D., SLP 258 B				1
D02	4 2029 72670	L.E.D., SLP 258 B				1
D03	4 2029 72670	L.E.D., SLP 258 B				1
D04	4 2029 72670	L.E.D., SLP 258 B				1
D05	4 2029 72670	L.E.D., SLP 258 B				1
D06	4 2029 72670	L.E.D., SLP 258 B				1
D07	4 2029 72670	L.E.D., SLP 258 B				1
D08	4 2029 72670	L.E.D., SLP 258 B				1
D09	4 2029 72670	L.E.D., SLP 258 B				1
D10	4 2029 72670	L.E.D., SLP 258 B				1
D11	4 2029 72670	L.E.D., SLP 258 B				1
D12	4 2029 72670	L.E.D., SLP 258 B				1
D13	4 2029 72670	L.E.D., SLP 258 B				1
D14	4 2029 72670	L.E.D., SLP 258 B				1
D15	4 2029 72670	L.E.D., SLP 258 B				1
D16	4 2029 72670	L.E.D., SLP 258 B				1
D17	4 2029 72670	L.E.D., SLP 258 B				1
D18	4 2029 72670	L.E.D., SLP 258 B				1
IC01	4 2069 72360	IC, BA 681 A				1
IC02	4 2069 72360	IC, BA 681 A				1
	RESISTORS					
R01	RD1 0 2251 JM000	Carbon	1kΩ	1/4W	±5%	1
R02	RD1 0 2251 JM000	Carbon	1kΩ	1/4W	±5%	1
R03	RD2 2 4251 JM000	Carbon	220kΩ	1/4W	±5%	1
R04	RD2 2 4161 JH000	Carbon	220kΩ	1/6W	±5%	1

Ref. No.	Part No.	Description				Q'ty
R05	RD2 7 3161 JH000	Carbon	27kΩ	1/6W	±5%	1
R06	RD2 7 3161 JH000	Carbon	27kΩ	1/6W	±5%	1
R07	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R08	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
R09	RD1 0 3251 JM000	Carbon	10kΩ	1/4W	±5%	1
R10	RD1 0 3161 JH000	Carbon	10kΩ	1/6W	±5%	1
	RCA JACK P.C.B.Assy					
	141 0 1939 00610	RCA Jack P.C.B.Assy				1
	4 2352 01700	Pin Jack 4P				1
	MAIN SUPPLY P.C.B.Assy					
	141 0 1939 00572	Main Supply P.C.B.Assy				1
⚠	4 2329 70330	Relay				1
⚠	4 2349 20570	Fuse T 2.5 A				2
⚠	4 2349 21570	Fuse T 6.3 A				2
	4 2352 00200	Fuse Holder				8
	4 2369 73130	Connector 3P				1
	4 2369 73140	Connector 4P				1
	4 2369 73970	Plug 3P				1
	4 2369 73980	Plug 4P				1
	111 2 6220 11100	Wire Wrap Terminal				8
	131 2 6108 11201	Cover Sever				4
	131 2 6201 29800	Heat Sink				1
⚠	HLL - PTH4 87A-B	Posistor, PTH 487 A				2
L01	4 2532 00180	RF Filter				1
L02	4 2532 00180	RF Filter				1
	CAPACITORS					
C01	CD4 7 5250 0001V	Electrolytic	4.7μF	25V		1
C02	CD4 7 5250 0001V	Electrolytic	4.7μF	25V		1
C03	CC2 2 1500 KE00R	Ceramic	220pF	50V	±10%	1
C04	CC2 2 1500 KE00R	Ceramic	220pF	50V	±10%	1
C05	CC2 2 1500 KD00C	Ceramic	220pF	50V	±10%	1
C06	CC2 2 1500 KD00C	Ceramic	220pF	50V	±10%	1
C07	CC2 2 1500 KD00C	Ceramic	220pF	50V	±10%	1
C08	CC2 2 1500 KD00C	Ceramic	220pF	50V	±10%	1
C09	CD1 0 7100 0001V	Electrolytic	100μF	10V		1
C10	CD1 0 7100 0001V	Electrolytic	100μF	10V		1
C11	4 2239 71190	Ceramic	27pF	500V		1
C12	4 2239 71190	Ceramic	27pF	500V		1
C13	CM1 0 4500 J00TV	Mylar	0.1μF	50V	±5%	1
C14	CM1 0 4500 J00TV	Mylar	0.1μF	50V	±5%	1
C15	4 2239 71110	Ceramic	10pF	500V		1
C16	4 2239 71110	Ceramic	10pF	500V		1
C17	CD1 0 6350 0001V	Electrolytic	10μF	35V		1
C18	CD1 0 6350 0001V	Electrolytic	10μF	35V		1
C19	CM3 9 3500 K00SV	Mylar	0.039μF	50V	±10%	1
C20	CM3 9 3500 K00SV	Mylar	0.039μF	50V	±10%	1
C21	CD4 7 6101 0001V	Electrolytic	47μF	100V		1
C22	CD4 7 6101 0001V	Electrolytic	47μF	100V		1
C23	CD4 7 6101 0001V	Electrolytic	47μF	100V		1
C24	CD4 7 6101 0001V	Electrolytic	47μF	100V		1
C25	CC1 2 1500 KD00C	Ceramic	120pF	50V	±10%	1
C26	CC1 2 1500 KD00C	Ceramic	120pF	50V	±10%	1
C27	CC2 7 1500 KD00C	Ceramic	270pF	50V	±10%	1
C28	CC2 7 1500 KD00C	Ceramic	270pF	50V	±10%	1
C29	4 2239 71150	Ceramic	0.22μF	250V		1
C30	4 2239 71150	Ceramic	0.22μF	250V		1
C31	4 2239 71150	Ceramic	0.22μF	250V		1
C32	4 2239 71150	Ceramic	0.22μF	250V		1
C33	CK2 2 4101 K000V	Mylar	0.22μF	100V	±10%	1

PARTS LIST (Continued)

Ref. No.	Part No.	Description			Q'ty
C34	CK2 2 4101 K000V	Mylar	0.22μF	100V ±10%	1
C35	CK2 2 4101 K000V	Mylar	0.22μF	100V ±10%	1
C36	CK2 2 4101 K000V	Mylar	0.22μF	100V ±10%	1
C37	4 2239 71100	Electrolytic	7500μF	75V	1
C38	4 2239 71100	Electrolytic	7500μF	75V	1
C39	CD3 3 8350 0005V	Electrolytic	3300μF	35V	1
C40	CD3 3 8350 0005V	Electrolytic	3300μF	35V	1
C41	CD3 3 7250 0001V	Electrolytic	330μF	25V	1
C42	CD4 7 6350 0001V	Electrolytic	47μF	35V	1
C43	CD1 0 6350 0001V	Electrolytic	10μF	35V	1
C44	CD1 0 6350 0001V	Electrolytic	10μF	35V	1
C47	CD2 2 763A 0001V	Electrolytic	220μF	6.3V	1
C48	CD2 2 5500 0001V	Electrolytic	2.2μF	50V	1
C49	4 2239 71200	Ceramic	2pF	500V	1
C50	4 2239 71200	Ceramic	2pF	500V	1
C53	CC2 2 1500 KE00R	Ceramic	220pF	50V ±10%	1
C54	CC2 2 1500 KE00R	Ceramic	220pF	50V ±10%	1
	SEMICONDUCTORS				
D01	205 5 9040 44210	Diode, DS 442			1
D02	205 5 9040 44210	Diode, DS 442			1
D03	202 5 3220 27080	Zener Diode, GZA 27 X			1
D04	202 5 3220 27080	Zener Diode, GZA 27 X			1
D05	205 5 9040 44210	Diode, DS 442			1
D06	205 5 9040 44210	Diode, DS 442			1
D07	205 5 9040 44210	Diode, DS 442			1
D08	205 5 9040 44210	Diode, DS 442			1
D09	202 5 9600 44610	Diode, DS 446			1
D10	202 5 9600 44610	Diode, DS 446			1
D11	202 5 9600 44610	Diode, DS 446			1
D12	202 5 9600 44610	Diode, DS 446			1
D13 ⚠	202 5 3850 03012	Diode, GFB 30 C			1
D14 ⚠	202 5 3850 03012	Diode, GFB 30 C			1
D15 ⚠	202 5 2750 06015	Bridge Diode, DBA 60 C			1
D16 ⚠	202 5 2720 04015	Bridge Diode, DBA 40 C			1
D17	202 5 3210 15013	Zener Diode, GZA 15 Z			1
D18	202 5 3210 15013	Zener Diode, GZA 15 Z			1
D19	202 5 2500 13541	Diode, DS 135			1
D20	205 5 9040 44210	Diode, DS 442			1
D21	202 5 3200 03311	Zener Diode, GZA 3.3 X			1
D22	202 5 2500 13541	Diode, DS 135			1
Q01	203 5 4921 01260	Transistor, 2SD 1012 F,G			1
Q02	203 5 4921 01260	Transistor, 2SD 1012 F,G			1
Q03	TMM - 2SC1 583-F	Transistor, 2SC 1583 F,G			1
Q04	TMM - 2SC1 583-F	Transistor, 2SC 1583 F,G			1
Q05	4 2039 71180	Transistor, 2SC 2291 F,G			1
Q06	4 2039 71180	Transistor, 2SC 2291 F,G			1
Q07	203 5 7230 60860	Transistor, 2SA 608 F,G			1
Q08	203 5 7230 60860	Transistor, 2SA 608 F,G			1
Q09	4 2039 71130	Transistor, 2SB 716 A-D			1
Q10	4 2039 71130	Transistor, 2SB 716 A-D			1
Q11	4 2039 71140	Transistor, 2SB 717 C,D			1
Q12	4 2039 71140	Transistor, 2SB 717 C,D			1
Q13	4 2039 71150	Transistor, 2SD 757 C,D			1
Q14	4 2039 71150	Transistor, 2SD 757 C,D			1
Q15	203 5 6830 43850	Transistor, 2SD 438 E,F			1
Q16	203 5 6840 56050	Transistor, 2SB 560 E,F			1
Q17	203 5 4910 63150	Transistor, 2SB 631 E,F			1
Q18	203 5 4900 60050	Transistor, 2SD 600 E,F			1
Q19	203 5 6830 43850	Transistor, 2SD 438 E,F			1
Q20	203 5 6840 56050	Transistor, 2SB 560 E,F			1
Q21	203 5 8620 32550	Transistor, 2SD 325 E,F			1
Q22	203 5 5000 53651	Transistor, 2SC 536 E,F			1
Q23	203 5 5000 53651	Transistor, 2SC 536 E,F			1

Ref. No.	Part No.	Description			Q'ty
	RESISTORS				
R01	RD2 2 2251 JM000	Carbon	2.2kΩ	1/4W ±5%	1
R02	RD2 2 2251 JM000	Carbon	2.2kΩ	1/4W ±5%	1
R03	RD1 0 4251 JM000	Carbon	100kΩ	1/4W ±5%	1
R04	RD1 0 4251 JM000	Carbon	100kΩ	1/4W ±5%	1
R05	RD5 6 2251 JM000	Carbon	5.6kΩ	1/4W ±5%	1
R06	RD5 6 2251 JM000	Carbon	5.6kΩ	1/4W ±5%	1
R07	RD1 5 3251 JM000	Carbon	15kΩ	1/4W ±5%	1
R08	RD1 5 3251 JM000	Carbon	15kΩ	1/4W ±5%	1
R09	RD3 9 3251 JM000	Carbon	39kΩ	1/4W ±5%	1
R10	RD3 9 3251 JM000	Carbon	39kΩ	1/4W ±5%	1
R11	RD8 2 2251 JM000	Carbon	8.2kΩ	1/4W ±5%	1
R12	RD8 2 2251 JM000	Carbon	8.2kΩ	1/4W ±5%	1
R13	RD5 6 0251 JM000	Carbon	56Ω	1/4W ±5%	1
R14	RD5 6 0251 JM000	Carbon	56Ω	1/4W ±5%	1
R15	RD5 6 0251 JM000	Carbon	56Ω	1/4W ±5%	1
R16	RD5 6 0251 JM000	Carbon	56Ω	1/4W ±5%	1
R17	RD2 7 1251 JM000	Carbon	270Ω	1/4W ±5%	1
R18	RD2 7 1251 JM000	Carbon	270Ω	1/4W ±5%	1
R19	RD4 7 0251 JS000	Carbon	47Ω	1/4W ±5%	1
R20	RD4 7 0251 JS000	Carbon	47Ω	1/4W ±5%	1
R21	RD3 3 3251 JM000	Carbon	33kΩ	1/4W ±5%	1
R22	RD3 3 3251 JM000	Carbon	33kΩ	1/4W ±5%	1
R23	RD6 8 0251 JM000	Carbon	68Ω	1/4W ±5%	1
R24	RD6 8 0251 JM000	Carbon	68Ω	1/4W ±5%	1
R25	RD1 0 1251 JS000	Carbon	100Ω	1/4W ±5%	1
R26	RD1 0 1251 JS000	Carbon	100Ω	1/4W ±5%	1
R27	RD1 0 1251 JS000	Carbon	100Ω	1/4W ±5%	1
R28	RD1 0 1251 JS000	Carbon	100Ω	1/4W ±5%	1
R29	RD5 6 3251 JM000	Carbon	56kΩ	1/4W ±5%	1
R30	RD5 6 3251 JM000	Carbon	56kΩ	1/4W ±5%	1
R31	RH4 7 2501 JZ000	Metal	4.7kΩ	1/2W ±5%	1
R32	RH4 7 2501 JZ000	Metal	4.7kΩ	1/2W ±5%	1
R33	RF1 0 0251 JK000	Mold	10Ω	1/4W ±5%	1
R34	RF1 0 0251 JK000	Mold	10Ω	1/4W ±5%	1
R35	RF4 7 0251 JK000	Mold	47Ω	1/4W ±5%	1
R36	RF4 7 0251 JK000	Mold	47Ω	1/4W ±5%	1
R37	RD2 2 A251 JM000	Carbon	2.2Ω	1/4W ±5%	1
R38	RD2 2 A251 JM000	Carbon	2.2Ω	1/4W ±5%	1
R39	4 2219 70370	Cement	0.22Ωx2	5W ±10%	1
R40	4 2219 70370	Cement	0.22Ωx2	5W ±10%	1
R41	RH4 7 A501 JZ000	Metal	4.7Ω	1/2W ±5%	1
R42	RH4 7 A501 JZ000	Metal	4.7Ω	1/2W ±5%	1
R43	RH1 0 0102 JZ000	Metal	10Ω	1W ±5%	1
R44	RH1 0 0102 JZ000	Metal	10Ω	1W ±5%	1
R45	RD1 0 3251 JM000	Carbon	10kΩ	1/4W ±5%	1
R46	RD1 0 3251 JM000	Carbon	10kΩ	1/4W ±5%	1
R47	RD1 2 2251 JM000	Carbon	1.2kΩ	1/4W ±5%	1
R48	RD1 2 2251 JM000	Carbon	1.2kΩ	1/4W ±5%	1
R49	RD1 8 2251 JM000	Carbon	1.8kΩ	1/4W ±5%	1
R50	RD1 8 2251 JM000	Carbon	1.8kΩ	1/4W ±5%	1
R51	RD2 2 2251 JM000	Carbon	2.2kΩ	1/4W ±5%	1
R52	RD2 2 2251 JM000	Carbon	2.2kΩ	1/4W ±5%	1
R53	RD5 6 2251 JM000	Carbon	5.6kΩ	1/4W ±5%	1
R54	RD5 6 2251 JM000	Carbon	5.6kΩ	1/4W ±5%	1
R55	RD8 2 3251 JM000	Carbon	82kΩ	1/4W ±5%	1
R56	RD8 2 3251 JM000	Carbon	82kΩ	1/4W ±5%	1
R57	RD4 7 1251 JM000	Carbon	470Ω	1/4W ±5%	1
R58	RD4 7 1251 JM000	Carbon	470Ω	1/4W ±5%	1
R59	RF1 2 1501 JZ000	Mold	120Ω	1/2W ±5%	1
R60	RF1 2 1501 JZ000	Mold	120Ω	1/2W ±5%	1
R61	RD2 2 2251 JM000	Carbon	2.2kΩ	1/4W ±5%	1
R62	RD1 2 2251 JM000	Carbon	1.2kΩ	1/4W ±5%	1
R63	RD1 2 2251 JM000	Carbon	1.2kΩ	1/4W ±5%	1

PARTS LIST (Continued)

Ref. No.	Part No.	Description			Q'ty
R64	RD1 2 2251 JM000	Carbon	1.2kΩ	1/4W ±5%	1
R65	RD8 2 0251 JS000	Carbon	82Ω	1/4W ±5%	1
R66	RD1 0 1251 JS000	Carbon	100Ω	1/4W ±5%	1
R67	RH6 8 0202 JZ000	Metal	68Ω	2W ±5%	1
R68	RF2 2 0251 KH000	Mold	22Ω	1/4W ±10%	1
R69	RD1 8 2251 JM000	Carbon	1.8kΩ	1/4W ±5%	1
R70	RD1 2 2251 JM000	Carbon	1.2kΩ	1/4W ±5%	1
R71	RD8 2 3251 JM000	Carbon	82kΩ	1/4W ±5%	1
R72	RD1 5 3251 JM000	Carbon	15kΩ	1/4W ±5%	1
R73	RF1 5 1251 JK000	Mold	150Ω	1/4W ±5%	1
R74	RD1 5 2251 JM000	Carbon	1.5kΩ	1/4W ±5%	1
R75	RD6 8 2251 JM000	Carbon	6.8kΩ	1/4W ±5%	1
R76	RD1 8 3251 JM000	Carbon	18kΩ	1/4W ±5%	1
R77	RD1 0 4251 JM000	Carbon	100kΩ	1/4W ±5%	1
	SPEAKER / TONE SWITCH P.C.B.Assy				
	141 0 1939 00591	Speaker / Tone Switch P.C.B.Assy			1
	4 2319 76290	Switch Push 3 Key			1
⚠	4 2349 20550	Fuse F 4.0 A			2
	4 2352 00200	Fuse Holder			4
	4 2369 73670	Plug 3P			1
	SPEAKER TERMINAL P.C.B.Assy				
	141 0 1939 00602	Speaker Terminal P.C.B.Assy			1
	4 2372 01160	Speaker Terminal 8P			1
	SWITCH FUSE P.C.B.Assy				
	141 0 1939 00582	Switch Fuse P.C.B.Assy			1
⚠	4 2312 05710	Switch Push Power			1
	4 2352 00970	Headphone Jack 3P			1
	4 2372 00830	EC Terminal 1P			2
	111 2 6220 11100	Wire Wrap Terminal			2
	131 2 6114 00200	Cover Safety			1
	CAPACITOR				
C01 ⚠	4 2239 70970	Ceramic	0.01μF	400V	1
	RESISTORS				
R01	RH5 6 1202 JZ000	Metal	560Ω	2W ±5%	1
R02	RH5 6 1202 JZ000	Metal	560Ω	2W ±5%	1
R03	RH1 2 1102 JZ000	Metal	120Ω	1W ±5%	1
R04	RH1 2 1102 JZ000	Metal	120Ω	1W ±5%	1

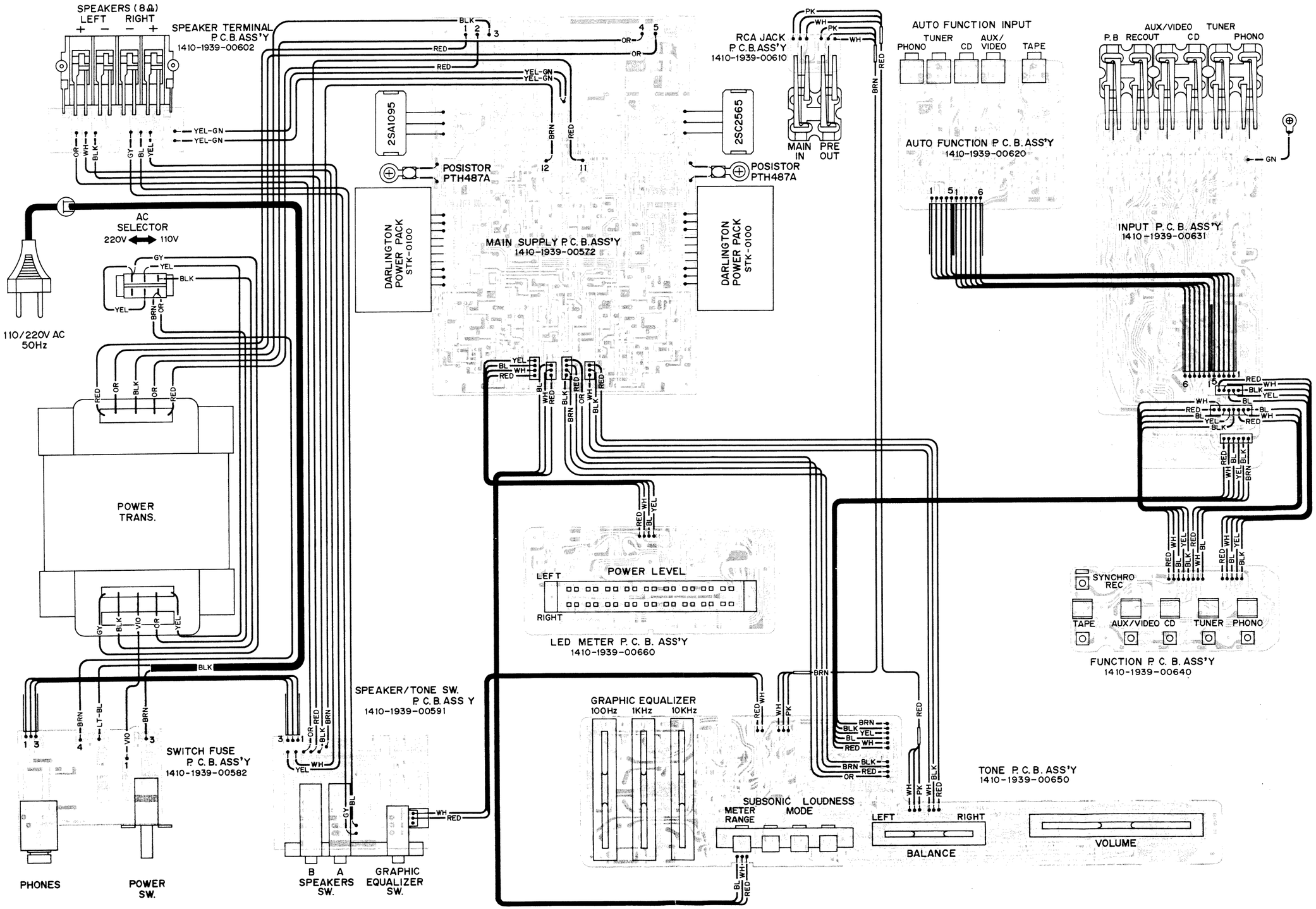
NOTES:

1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

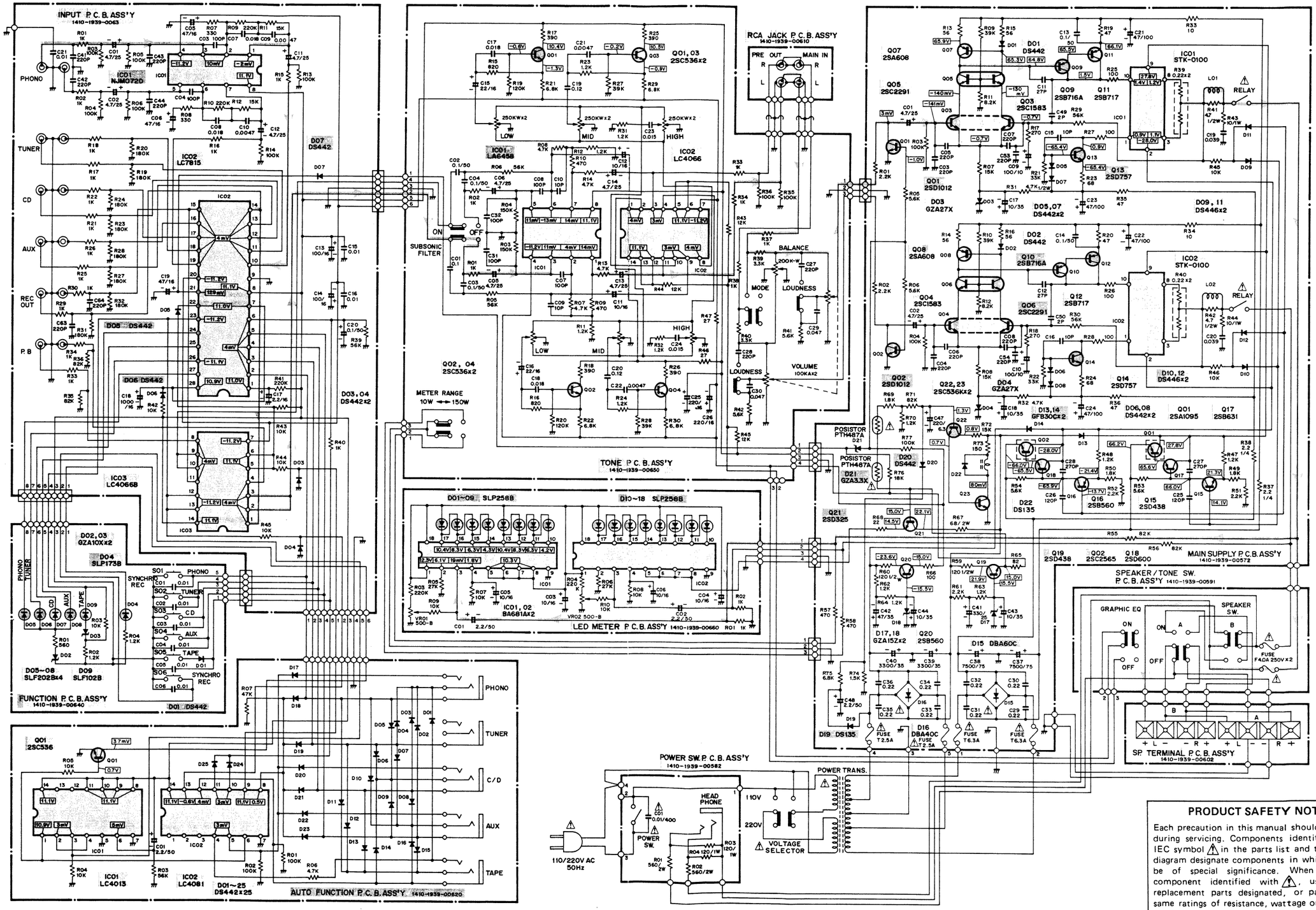
PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.
Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

POINT TO POINT WIRING DIAGRAM



SCHEMATIC DIAGRAM



NOTES:
1. All resistors values are indicated in "ohm" (K=10^3, M=10^6).
2. All capacitors values are indicated in "μF" (P=10^{-12}).
3. All voltages indicated on the schematics are measured under the following conditions.
   a. Use a V.T.V.M.
   b. All voltages ±10% with respect to chassis ground
   c. AC input at 220 volts 50 Hz
   d. FUNCTION SW: AUX
   e. Input Signal: 1 kHz (Sine-wave)
   f. Load Resistance: 8Ω
      Output: 12.8 W + 12.8 W (10.12 V)
4. This is a basic schematic diagram.

PRODUCT SAFETY NOTICE

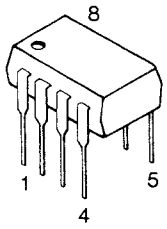
Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.
Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

Because Fisher products are subject to continuous improvement, Fisher Corporation reserves the right to make any changes or modifications without notice.

SEMICONDUCTOR LEAD IDENTIFICATION

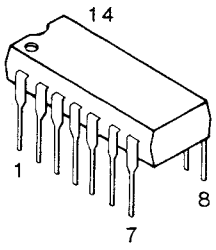
INTEGRATED CIRCUITS

PHONO EQ AMP IC
GRAPHIC EQ AMP IC



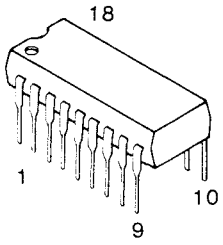
- LA 6458 D
- NJM 072 D

TAPE SW IC



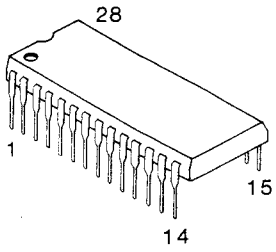
- LC 4013 B
- LC 4066 B
- LC 4081 B

L.E.D. LEVEL IC



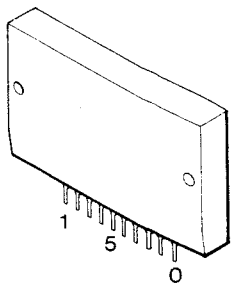
- BA 681 A

FUNCTION SWITCH IC



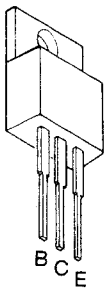
- LC 7815 H

POWER AMPLIFIER IC

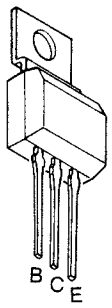


- STK 0100

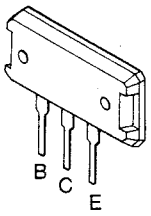
TRANSISTORS



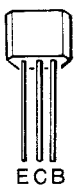
- 2SD 325



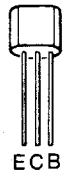
- 2SB 717
- 2SD 757



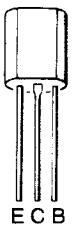
- 2SA 1095
- 2SC 2565



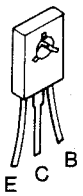
- 2SD 1012



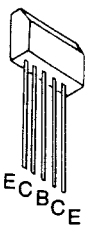
- 2SA 608
- 2SC 536
- 2SC 1570



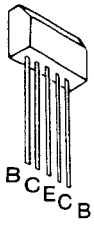
- 2SD 438
- 2SB 560
- 2SB 716 A



- 2SD 600
- 2SB 631



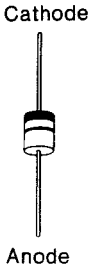
- 2SC 2291



- 2SC 1583

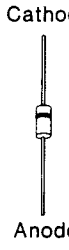
SEMICONDUCTOR LEAD IDENTIFICATION (Continued)

DIODES

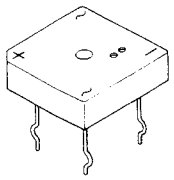


- DS 135 D

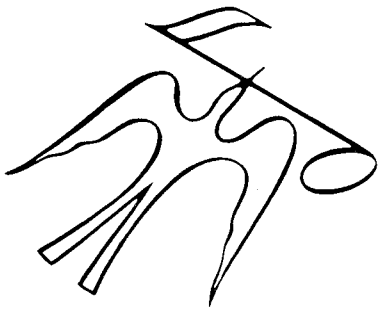
- GFB 30 C



- DS 442
- DS 446
- GZA 3.0 Z
- GZA 3.2 X
- GZA 10 X
- GZA 15 Z
- GZA 27 X



- DBA 40 C
- DBA 60 C



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PRINTED IN JAPAN
'83/May **WM-9736**